Amphenol LTW®

*Unrivaled InterConnects for Harsh Environments*

# HDMI

## Product Catalogue



(V092722)

Amphenol LTW creates high-quality waterproof HDMI cables for today's high definition media. Our HDMI family product offering is customizable to fit customer specific configurations.

## Contents

# Product Selection Guide

## Circular (Ceres, X-Lok, M)

| | Mating Style | | | | | | Materials | No. of Contacs | Contacts | | Operating Voltage (AC/DC) | Nominal Current | Applicable Wires (AWG) | Mating Cycles (Pin Contact) | High Speed | | Salt Spray (Connector, Mated) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 Points Lock | 3 Points Lock | Push Lock | Push Pull | Screw Thread | Others | | | Gold Plated | Silver Plated | | | | | Cat. 5e | Cat. 6A | |
| **Ceres Series** | | | | | | | | | | | | | | | | | |
| Mini | • | | | | • | | B | 2-6 | • | | 250V | 2A-5A | 26-24 | 2,000 | | | 500h |
| Standard | • | | | | • | | B | 2-12 | • | | 250-600V | 2A-10A<br>5A+2A<br>10A+5A | 26-20 | 2,000 | | | 500h |
| Middle | • | • | | | • | | P | 2-18 | • | • | 250-600V | 2A-20A<br>5A+2A<br>10A+2A<br>10A+5A | 24-14 | 2,000 | | | 500h |
| Large | • | | | | • | | B | 2-22 | • | • | 250-600V | 2A-20A<br>20A+2A<br>20A+5A | 26-16 | 2,000 | | | 500h |
| Macro | • | | | | | | P | 31 | • | | 200V | 5A | 26 | 2,000 | | | 500h |
| PLD | | | • | | | | P | 2-4 | • | | 250V | 5A | 26-20 | 2,000 | | | 500h |
| MAB | • | | | | | | P | 4 | • | | 250V | 10A | 20 | 2,000 | | | 500h |
| GBD | | • | | | | | P | 8 | • | | 250V | 10A+5A | 20-24 | 2,000 | | | 500h |
| **X-LOK Series** | | | | | | | | | | | | | | | | | |
| Mini / LED | | | • | | | | B | 2-33 | • | | 30-630V | 0.5A-16A | 32-14 | 1,000 | • | • | 1000h |
| Standard | | | • | | | | P | 2-8 | • | | 300-600V | 5A-10A<br>10A+5A | 26-16 | 1,000 | | | 1000h |
| Middle | | | • | | | | P | 2-12 | • | • | 300-600V | 5A-20A<br>10A+5A | 26-12 | 1,000 | | | 1000h |
| Large | | | • | | | | B | 2-100 | • | • | 60V (0.5A)<br>300-600V | 0.5A-20A<br>20A+5A<br>50A<br>50A+5A | 32-6 | 1,000 | | | 1000h |
| Macro | | | • | | | | P | 4-31 | • | • | 300-600V | 5A<br>50A+5A<br>80A+5A | 22-2 | 1,000 | | | 1000h |
| **M Series** | | | | | | | | | | | | | | | | | |
| M5 | | | | | • | | M | 3-6 | • | | 60V | 1A | 28-26 | 1,000 | | | 48h |
| Guided M8 / LED | | | | | • | Snap-in | B | 2-6 | • | | 30-60V | 2A-4A<br>3A+1.5A | 24-22 | 1,000 | | | 48h |
| M8 / LED | | | | | • | Snap-in | B | 3-13 | • | | 30-60V | 0.5A-4A | 32-22 | 1,000 | | | 48h |
| M10.5 | | | | | • | | M | 2-5 | • | | 30V | 2A | 24 | 1,000 | | | 48h |
| M12 A / LED | | | | • | • | | B | 3-28 | • | | 30-250V | 0.5A-4A | 30-22 | 1,000 | • | | 48h |
| M12 B / LED | | | | • | • | | B | 5 | • | | 60V | 4A | 26-22 | 1,000 | | | 48h |
| M12 D / LED | | | | • | • | | B | 4 | • | | 250V | 4A | 26-22 | 1,000 | • | | 48h |
| M12 I | | | | • | • | | B | 5 | • | | 60V | 4A | 22 | 1,000 | | | 48h |
| M12 K / LED | | | | • | • | | B | 3-5 | • | | 630V | 12A, 16A | 14 | 1,000 | | | 48h |
| M12 L / LED | | | | • | • | | B | 2-5 | • | | 63V | 16A | 14 | 1,000 | | | 48h |
| M12 M / LED | | | | • | • | | B | 3-6 | • | | 630V | 8A | 16 | 1,000 | | | 48h |
| M12 S / LED | | | | • | • | | B | 3-4 | • | | 630V | 12A | 16 | 1,000 | | | 48h |
| M12 T / LED | | | | • | • | | B | 2-4 | • | | 63V | 12A | 16 | 1,000 | | | 48h |
| M12 X | | | | • | • | | M | 8 | • | | 30-60V | 0.5A | 26 | 1,000 | | • | 48h |
| M12 Y | | | | • | • | | B | 8 | • | | 60V | 0.5A / 6A | 20, 26 | 1,000 | | | 48h |
| M23 | | | | | • | | M | 6 | • | | 600V | 28A | 14-12 | 1,000 | | | 48h |

Remarks:
Materials: **P** (Plastic), **M** (Metal), **B** (Both)

# Product Selection Guide

| | (R0) Receptacle | | | | | | | (FI) Field Installable | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solder | Crimp | SMT | PCB 180 | PCB 90 | RW | RC | Solder | Crimp | Screw In | Push In | IDC | OC | UV Resistant | UL 94V-0 | Vibration | EMI Option | ROHS 2.0 & REACH | Standard / Compliant | Certifications | Operating Temperature & IP Rating |
| **Ceres Series** | | | | | | | | | | | | | | | | | | | | | |
| Mini | • | | | • | | | • | • | | | | | • | • | • | (2) | • | • | | | |
| Standard | • | | | • | • | | • | • | • | | | | • | • | • | (2) | • | • | | UL1977 | ◦ **R0**: -40°C - 105°C, IP67 (Unmated) |
| Middle | • | | | • | | | • | • | • | | | | • | • | • | (2) | | • | | UL1977 | ◦ **RW**: -20°C - 85°C, IP67 (Unmated) |
| Large | • | | | • | | | | • | • | • | | | • | • | • | (2) | • | • | | UL1977 | ◦ **OC**: -20°C - 85°C, IP67 (Mated) |
| Macro | • | | | • | | | | | | | | | • | • | • | (2) | | • | | UL1977 | ◦ **FI**: -40°C - 105°C, IP67 (Mated) |
| PLD | • | | | | | | | • | | | | | | • | • | (2) | | • | | | |
| MAB | | | | | | | | | | | | | • | • | • | (2) | | • | | | |
| GBD | | | | | | | | | | | | | • | • | • | (2) | | • | | | |
| **X-LOK Series** | | | | | | | | | | | | | | | | | | | | | |
| Mini / LED | • | | | • | • | | | • | • | • | • | | • | • | • | (2) | • | • | | | |
| Standard | • | | | • | | | | • | • | • | • | | • | • | • | (2) | • | • | | CSA, UL1977, UL2238, UL50e | ◦ **R0** & **RW**: -40°C - 105°C, IP68 (Unmated) |
| Middle | • | | | • | | | | • | • | • | • | | • | • | • | (2) | | • | | | |
| Large | • | | | • | | | | • | • | • | • | | • | • | • | (2) | • | • | | | ◦ **OC** & **FI**: -40°C ~ 105°C, IP68 (Mated) |
| Macro | • | • | | • | | | | | • | • | | | • | • | • | (2) | | • | | | |
| **M Series** | | | | | | | | | | | | | | | | | | | | | |
| M5 | • | | | • | • | • | | | | | | | • | • | • | (1) | | • | IEC 61076-2-105 | | |
| Guided M8 / LED | • | | • | • | • | • | | • | • | • | | • | • | • | • | (1) | • | • | | | |
| M8 / LED | • | | • | • | • | • | | • | • | • | | • | • | • | • | (1) | • | • | IEC 61076-2-104 | UL1977, UL2238 | |
| M10.5 | • | | | | | • | | | | | | | • | • | 94-HB | (1) | | • | | | |
| M12 A / LED | • | | • | • | • | • | | • | • | • | • | • | • | • | • | (1) | • | • | IEC 61076-2-101 | UL1977, UL2238, UL1863 | ◦ **R0**: -40°C ~ 105°C, IP67 (Mated / Unmated), IP68 (Unmated), IP69K (Mated) |
| M12 B / LED | • | | • | • | • | • | | • | • | • | • | • | • | • | • | (1) | • | • | IEC 61076-2-101 | UL1977, UL2238 | |
| M12 D / LED | • | | • | • | • | • | | • | • | • | • | • | • | • | • | (1) | • | • | IEC 61076-2-101 | UL1977, UL2238, UL1863 | ◦ **RW**: -20°C ~ 85°C, IP67 (Mated / Unmated), IP68 (Unmated), IP69K (Mated) |
| M12 I | • | | | • | | | | • | | | | | • | • | 94-HB | (1) | | • | | | |
| M12 K / LED | • | | • | • | • | • | | • | • | • | | | • | • | • | (1) | | • | IEC 61076-2-111 | UL1977, UL2237 | |
| M12 L / LED | • | | • | • | • | • | | • | • | • | | | • | • | • | (1) | | • | IEC 61076-2-111 | UL1977, UL2238 | ◦ **OC**: -20°C ~ 85°C, IP67 / IP68 (Mated) |
| M12 M / LED | • | | • | • | • | • | | • | • | • | | | • | • | • | (1) | • | • | IEC 61076-2-111 | | |
| M12 S / LED | • | | • | • | • | • | | • | • | • | | | • | • | • | (1) | | • | IEC 61076-2-111 | UL1977, UL2237 | ◦ **FI**: -40°C ~ 105°C, IP67 / IP68 (Mated) |
| M12 T / LED | • | | • | • | • | • | | • | • | • | | | • | • | • | (1) | | • | IEC 61076-2-111 | UL1977, UL2238 | |
| M12 X | | | • | • | • | • | | • | • | | | • | • | • | • | (1) | • | • | IEC 61076-2-109 | UL1863 | |
| M12 Y | | | | • | • | • | | • | | | | | • | • | • | (1) | • | • | IEC 61076-2-109 | UL1863 | |
| M23 | | • | | | | | | | • | | | | • | • | • | (1) | • | • | | | |

Remarks:
Assemble Style: **R0** (Receptacle), **RW** (Receptacle With Wires), **RC** (Receptacle With Overmolded Cable), **OC** (Overmolded With Cables), **FI** (Field Installable)
Vibration: **(1)** 10-500 Hz @Amplitude 0.35mm; **(2)** 10-55Hz @Amplitude 1.52mm
Operation Temperature & IP Rating: **R0** (Receptacle), **RW** (Receptacle With Wires), **OC** (Overmolded With Cables), **FI** (Field Installable)

# Product Selection Guide

## Circular (FLOS, Power, RBL)

| | Mating Style | | | | | | Materials | No. of Contacs | Contacts | | Operating Voltage (AC/DC) | Nominal Current | Applicable Wires (AWG) | Mating Cycles (Pin Contact) | Salt Spray (Connector, Mated) | (R0) Receptacle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 Points Lock | 3 Points Lock | Push Lock | Push Pull | Screw Thread | Others | | | Gold Plated | Silver Plated | | | | | | Solder | Crimp | Screw In |
| **FLOS Series** | | | | | | | | | | | | | | | | | | |
| B | | | | • | | | M | 2-32 | • | | 160-700V | 1.5A-25A | 28-16 | 5,000 | 144h | • | | |
| K | | | | • | | | M | 2-32 | • | | 160-700V | 1.5A-25A | 28-16 | 5,000 | 144h | • | | |
| K (FLOS+) | | | | • | | | M | 2-32 | • | | 160-700V | 1.5A-25A | 28-16 | 5,000 | 1000h | • | | |
| C | | | | • | | | M | 2-19 | • | | 160-700V | 1.5A-20A | 28-16 | 3,000 | 144h | • | | |
| S | | | | • | | | M | 1 | • | | 260-1000V | 15A | 28-16 | 3,000 | 144h | • | | |
| Y | | | | • | | Break Away | M | 2-26 | • | | 260-1000V | 5A-14A | 28-16 | 5,000 | 96h | • | | |
| P | | | | • | | | P | 2-14 | • | | 200-400V | 2A-10A | 28-16 | 2,000 | | • | | |
| N | | | | • | | | M | 2-19 | • | | 200-800V | 5A-22A | 28-16 | 3,000 | 144h | • | | |
| **Power Series** | | | | | | | | | | | | | | | | | | |
| PWE | | | | | • | | P | 5-7 | • | | 277V | 8A | 20-17 | 500 | 500h | • | | |
| PWF | | | | | • | | P | 2-4 | • | | 277V | 12A | 18-15 | 500 | 500h | • | | |
| PWG | | | | | • | | P | 4 | • | | 277V | 16A | 18-14 | 500 | 500h | | | • |
| PWC | • | • | | | | | P | 3 | • | | 277V | 20A | 14-12 | 500 | 500h | • | | |
| PWCU | • | • | | | | | P | 4 & 12 | • | | 277V | 20A+2A | 14-12, 24-22 | 500 | 500h | • | | |
| PWH | | • | | | • | | P | 3, 5 | • | | 660V (AC) 1000V (DC) | 25A | 12 | 500 | 500h | | • | • |
| PWL | | • | | | | | P | 3 | • | | 300V | 30A | 14-8 | 500 | 500h | | | • |
| PWM | | • | | | | | P | 2 | • | | 600V | 50A | 9-8 | 500 | 720h | • | | |
| PWMU | | • | | | | | P | 2+2, 2+4 | • | | 600V | 50A+2A | 9-8, 22-20 | 500 | 720h | • | | |
| PWN | | • | | | | | P | 2 | • | | 600V | 70A | 8-6 | 500 | 720h | • | | |
| PWNU | | • | | | | | P | 2+2, 2+4 | • | | 600V | 70A + 2A | 8-6, 22-20 | 500 | 720h | • | | |
| PWP | | • | | | | | P | 2 & 3 | • | | 600V | 80A | 4 | 500 | 720h | | • | |
| PWPD | | • | | | | | P | 2+2, 2+4, 3+2, 3+4 | • | | 600V | 80A+5A | 4, 20 | 500 | 720h | | • | |
| PWX | | • | | | | | P | 9 (30A) 14 (30A+5A) 5 (50A) 12 (50A+5A) 4 (80A) 7 (80A+5A) | | • | 300-600V | 30A, 30A+5A 50A, 50A+5A 80A, 80A+5A | 22-20, 14-8, 9-8, 4 | 500 | 720h | | • | |
| **RBL Series** | | | | | | | | | | | | | | | | | | |
| Middle | | | With Latch | | | | P | 2-9 | • | | 300V | 5A-10A 10A+5A | 20-16 | 250 | 48h | | | |
| Large | | | With Latch | | | | P | 2-18 | • | | 300V | 5A-20A 20A+5A | 24-12 | 250 | 48h | | | |

Remarks:
Materials: **P** (Plastic), **M** (Metal)
Assemble Style: **R0** (Receptacle)

# Product Selection Guide

| | (R0) Receptacle | | RW | (FI) Field Installable | | | OC | UV Resistant | UL 94V-0 | Vibration | EMI Option | ROHS 2.0 & REACH | Certifications | IP Rating | Operating Temperature |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PCB 180 | PCB 90 | | Solder | Crimp | Screw In | | | | | | | | | |
| **FLOS Series** | | | | | | | | | | | | | | | |
| B | • | • | | • | • | | • | | • | (2) | • | • | | IP50 (Mated) | |
| K | • | • | | • | • | | • | | • | (2) | • | • | | IP68 (Mated) | |
| K (FLOS+) | • | • | | • | • | | • | | • | (2) | • | • | | **R0:** IP68 (Unmated)<br>**OC:** IP68 (Mated)<br>**FI:** IP68 (Mated) | ◦ **R0**: -40°C - 125°C |
| C | • | • | | • | • | | • | | • | (2) | • | • | | IP68 (Mated) | ◦ **OC**: -20°C - 85°C |
| S | • | • | | • | • | | • | | • | (2) | • | • | | IP50 (Mated) | ◦ **FI**: -40°C - 125°C |
| Y | • | • | | • | • | | • | | • | (2) | • | • | | IP68 (Mated) | |
| P | • | • | | • | • | | • | • | • | (2) | | • | | IP50 / IP66 (Mated) | |
| N | • | • | | • | • | | • | | • | (2) | • | • | | IP68 (Mated) | |
| **Power Series** | | | | | | | | | | | | | | | |
| PWE | | | | • | | | • | | 94-HB | (2) | | • | UL1977 | IP67 / IP68 | |
| PWF | | | | • | | | • | | 94-HB | (2) | | • | UL1977, TUV | IP67 / IP68 | |
| PWG | | | | | | • | • | | • | (2) | | • | UL1977 | IP67 / IP68 | |
| PWC | | | | • | | • | • | • | • | (2) | | • | UL1977, TUV/UL2238 | IP67 / IP68 | |
| PWCU | | | | • | | | • | • | • | (2) | | • | UL1977, TUV | IP67 / IP68 | |
| PWH | | | | | • | • | • | • | • | (2) | | • | UL1977, UL6703A, TUV | IP67 / IP68 | |
| PWL | | | | • | | • | | • | • | (2) | | • | UL2238/UL1977 | IP67 / IP68 | |
| PWM | | | | | | • | | • | • | (2) | | • | UL1977 | IP67 (Mated) | |
| PWMU | | | | | | • | | • | • | (2) | | • | UL1977 | IP67 (Mated) | ◦ **R0**: -40°C - 105°C |
| PWN | | | | | | • | • | • | • | (2) | | • | UL1977 | IP67 (Mated) | ◦ **OC**: -20°C ~ 80°C |
| PWNU | | | | | | • | • | • | • | (2) | | • | UL1977 | IP67 (Mated) | ◦ **FI**: -40°C ~ 105°C |
| PWP | | | | | • | | | • | • | (2) | | • | UL1977 | IP67 (Mated) | |
| PWPD | | | | | • | | | • | • | (2) | | • | UL1977 | IP67 (Mated) | |
| PWX | | | | | • | | | • | • | | | • | UL1977 | IP69K (Mated) | |
| **RBL Series** | | | | | | | | | | | | | | | |
| Middle | | | • | | • | | • | • | • | (2) | | • | UL1977 | **RW:** IP68 (Unmated)<br>**OC:** IP68 (Mated)<br>**FI:** IP67 (Mated) | ◦ **RW**: -40°C ~ 105°C<br>◦ **OC**: -20°C ~ 80°C,<br>Data: -20°C ~ 80°C<br>Power: -20°C ~ 105°C<br>Hybrid: -40°C ~ 105°C<br>◦ **FI**: -40°C ~ 105°C |
| Large | | | • | | • | | • | • | • | (2) | | • | | | |

Remarks:
Assemble Style: **R0** (Receptacle), **RW** (Receptacle With Wires), **OC** (Overmolded With Cables), **FI** (Field Installable)
Vibration: **(2)** 10-55Hz @Amplitude 1.52mm
Operation Temperature & IP Rating: **R0** (Receptacle), **RW** (Receptacle With Wires), **OC** (Overmolded With Cables), **FI** (Field Installable)

# Product Selection Guide

## Circular (HS-Lok, NMEA 2000, Mini, Heavy Duty Shielded)

| | Mating Style | | Materials | No. of Contacs | Contacts Gold Plated | Operating Voltage (AC/DC) | Nominal Current | Applicable Wires (AWG) | Mating Cycles (Pin Contact) | Salt Spray (Connector, Mated) | (R0) Receptacle | | | RW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Push Pull | Screw Thread | | | | | | | | | Solder | PCB 180 | PCB 90 | |
| **HS-Lok Series** | | | | | | | | | | | | | | |
| Q8 | • | | B | 2-6 | • | 100V (DC), 300V, 300V (AC) + 100V (DC) | 2A<br>5A<br>5A+2A | 24-20 | 2,000 | 500h | • | | | |
| **NMEA 2000** | | | | | | | | | | | | | | |
| Lite (Micro) | • | • | B | 5 | • | 60V | 4A | 16*1P+20*1P<br>18*1P+22*1P<br>22*1P+24*1P | Push Pull 500, Screw Thread 1,000 | Metal: 48h<br>Plastic: 1,000h | • | • | • | • |
| Heavy (Mini) | | • | M | 4-5 | • | 600V | 8A | 15*1P+18*1P<br>16*1P+18*1P | 1,000 | | • | • | | |
| **7/8" Mini** | | | | | | | | | | | | | | |
| 7/8" Mini | | • | M | 2, 2+PE, 4, 4+PE, 6 | • | 600V | 8A-13A | 16 | 1,000 | 48h | • | • | | • |
| **Heavy Duty Shielded** | | | | | | | | | | | | | | |
| Heavy Duty Shielded | | * | M | 2-14 | • | 50-300V | 5A-40A | 22-8 | 1,000 | 48h / 500h | • | | | |

Remarks:
Materials: **M** (Metal), **B** (Both)
Assemble Style: **R0** (Receptacle), **RW** (Receptacle With Wires)

# Product Selection Guide

| | (FI) Field Installable | | | | OC | UV Resistant | UL 94V-0 | Vibration | EMI Option | ROHS 2.0 & REACH | Certifications | IP Rating | Operating Temperature |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solder | Crimp | Screw In | Push In | | | | | | | | | |
| **HS-Lok Series** | | | | | | | | | | | | | |
| Q8 | • | | | | • | • | • | (2) | | • | UL2238, UL50e | **R0:** IP68 (Unmated)<br>**OC:** IP68 (Mated)<br>**FI:** IP68 (Mated) | ◦ **R0:** -40°C - 105°C<br>◦ **OC:** -40°C - 105°C<br>◦ **FI:** -40°C - 105°C |
| **NMEA 2000** | | | | | | | | | | | | | |
| Lite (Micro) | | | • | • | • | | • | (1) | • | • | NMEA 2000 | **R0:** IP68 (Unmated)<br>**RW:** IP68 (Unmated)<br>**OC:** IP68 (Mated)<br>**FI:** IP67 (Mated) | ◦ **R0:** -40°C - 105°C<br>◦ **RW:** -20°C - 85°C<br>◦ **OC:** -20°C - 85°C<br>◦ **FI:** -40°C - 105°C |
| Heavy (Mini) | | | • | • | • | | 94-HB | (1) | • | • | NMEA 2000 | | |
| **7/8" Mini** | | | | | | | | | | | | | |
| 7/8" Mini | • | • | • | | • | | • | (1) | | • | | **R0:** IP68 (Unmated)<br>**RW:** IP68 (Unmated)<br>**OC:** IP68 (Mated)<br>**FI:** IP67 (Mated) | ◦ **R0:** -40°C - 105°C<br>◦ **OC:** -40°C - 105°C<br>◦ **FI:** -40°C - 105°C |
| **Heavy Duty Shielded** | | | | | | | | | | | | | |
| Heavy Duty Shielded | • | | | | • | • | 94-HB | (1) | • | • | | **R0:** IP68 (Unmated)<br>**OC:** IP68 (Mated)<br>**FI:** IP68 (Mated) | ◦ **R0**: -40°C - 105°C<br>◦ **RW:** -20°C - 85°C<br>◦ **OC:** -20°C - 85°C<br>◦ **FI:** -40°C - 105°C |

Remarks:
Assemble Style: **OC** (Overmolded With Cables), **FI** (Field Installable)
Vibration: **(1)** 10-500 Hz @Amplitude 0.35mm; **(2)** 10-55Hz @Amplitude 1.52mm
Operation Temperature & IP Rating: **R0** (Receptacle), **RW** (Receptacle With Wires), **OC** (Overmolded With Cables), **FI** (Field Installable)

# Product Selection Guide

## Other IO (RJ45, USB, D-Sub, SSL, HDMI, DVI)

| | Mating Style | | | | | Materials | No. of Contacs | Gold Plated | Operating Voltage (AC/DC) | Nominal Current | Applicable Wires (AWG) | Mating Cycles (Pin Contact) | High Speed | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 Points Lock | 3 Points Lock | Push Lock | Screw Thread | Others | | | | | | | | Cat. 5e | Cat. 6A | USB 2.0 |
| **RJ45 Series** | | | | | | | | | | | | | | | |
| Middle | | • | | • | | B | 8 | | 44-57V (DC) | Max. 1.5A | Cat. 6A: 26 / Cat. 5e: 24 | 750 | • | • | |
| Large / I-Adaptor | • | • | | • | | P | 8 | | 44-57V (DC) | Max. 1.5A | 24 | 750 | • | | |
| ODVA | • | | | | | B | 8 | | 44-57V (DC) | Max. 1.5A | Cat. 6A: 26 / Cat. 5e: 24 | 750 | • | • | |
| Self-Closing Cover | | | | | | P | 8 | | 44-57V (DC) | Max. 1.5A | | 750 | • | • | |
| **USB Series** | | | | | | | | | | | | | | | |
| Mini USB Type B | | | | • | | P | | • | 30V | 1.5A | 28*1P + 28*3C | 5,000 | | | • |
| Type A | • | | | • | | B | | • | 30V | USB 2.0: 1.5A USB 3.2 Gen1: 1A | 28*1P + 24*2C | 1,500 | | | • |
| Type B | • | | | • | | B | | • | 30V | USB 2.0: 1.5A | 28*1P + 24*2C | 1,500 | | | • |
| Micro USB Swift | | | | | | M | | • | 30V (AC) 5V (DC) | 1 & 5 Pin: 1.8A 2, 3 & 4 Pin: 1A | | 10,000 | | | • |
| Micro USB Swift-MU | | | | | Snap-in | P | | • | 30V (AC) 5V (DC) | 1 & 5 Pin: 1.8A 2, 3 & 4 Pin: 1A | 28 | 10,000 | | | • |
| Type C Swift-LP | | | | | | M | | • | 30V (DC) | Up To 5A | 32*1P + 24*1C + 28*1D | 10,000 | | | |
| Type C Swift-LA | | | | | Snap-in | P | | • | 30V (DC) | Up To 3A | 32*1P + 24*1C + 28*1D | 10,000 | | | • |
| Type C Swift-GG | | | | • | | B | | • | 30V (DC) | Up To 5A | 32*1P + 24*1C + 28*1D | 10,000 | | | |
| Type C Swift-XL | | | • | | | P | | • | 30V (DC) | Up To 3A | 32*1P + 24*1C + 28*1D | 10,000 | | | |
| **D-SUB Series** | | | | | | | | | | | | | | | |
| Standard | | | | • | Automated Latch | M | 9, 15, 25, 37, 50* | • | 125V (DC) | 5A | 24 | 500 | | | |
| High Density | | | | • | Automated Latch | M | 15, 26, 44, 62*, 78* | • | 125V (DC) | 2A | 26 | 500 | | | |
| **SSL Series** | | | | | | | | | | | | | | | |
| SSL1.1 | | | • | | | P | 2-6 | • | 100V | 3A | 22 | 100 | | | |
| SSL1.2 | | | • | | | P | 2-4 | • | Wire: 250V Flat Cable: 300V | 5A | 22-18 | Wire: 30 Flat Cable: 100 | | | |
| **HDMI Series** | | | | | | | | | | | | | | | |
| Circular | | | | • | | P | 19 | • | 30V (AC) | 0.5A | 26 | 500 | | | |
| Rectangular | | | • | | With Latch | P | 19 | • | 30V (AC) | 0.5A | 26 | 500 | | | |
| Mini-HDMI | | | | • | | P | 19 | • | 30V (AC) | 0.5A | 30 | 500 | | | |
| **DVI Series** | | | | | | | | | | | | | | | |
| DDD | | | | | | M | 25 | • | 40V (AC) | 1.5A | 28 | 100 | | | |
| DDS | | | | | | M | 19 | • | 40V (AC) | 1.5A | 28 | 100 | | | |
| DID | | | | | | M | 29 | • | 40V (AC) | 1.5A | 28 | 100 | | | |
| DIS | | | | | | M | 23 | • | 40V (AC) | 1.5A | 28 | 100 | | | |

Remarks:
Materials: **P** (Plastic), **M** (Metal), **B** (Both)

# Product Selection Guide

| | High Speed USB 3.2 Gen1 | High Speed USB 3.2 Gen2 | Salt Spray (Connector, Mated) | R0 | RW | RP | OC | FI | UV Resistant | UL 94V-0 | Vibration | EMI Option | ROHS 2.0 & REACH | Standard / Compliant / Certifications | Operating Temperature & IP Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RJ45 Series** | | | | | | | | | | | | | | | |
| Middle | | | 48h | PCB 90 & 180, Jack 90 & 180 | | • | • | • | • | • | (2) | • | • | TIA/EIA-568, IEC 60603-7 | ◦ **R0:** -40°C - 105°C, IP67 (Unmated & Mated)<br>◦ **RP:** -20°C - 85°C, IP67 (Unmated & Mated)<br>◦ **OC:** -20°C - 85°C, IP67 (Mated)<br>◦ **FI:** -40°C - 105°C, IP67 (Mated) |
| Large / I-Adaptor | | | 48h | PCB180, Jack 90 & 180 | | • | • | • | • | • | (2) | • | • | TIA/EIA-568, IEC 60603-7 | |
| ODVA | | | 48h | Jack 180 | | • | • | • | • | • | (2) | • | • | TIA/EIA-568, IEC 60603-7 | |
| Self-Closing Cover | | | 48h | • | | | | | • | • | (2) | • | • | TIA/EIA-568, IEC 60603-7 | -40°C - 105°C, IP67 (Unmated) |
| **USB Series** | | | | | | | | | | | | | | | |
| Mini USB Type B | | | 48h | • | • | | • | • | | 94V-HB | (2) | • | • | | ◦ **R0:** -40°C - 105°C, IP67 (Unmated)<br>◦ **RW:** -20°C - 85°C, IP67 (Unmated)<br>◦ **OC:** -20°C - 85°C, IP67P (Mated)<br>◦ **FI:** -40°C - 105°C, IP67 (Mated) |
| Type A | • | | 48h | Type 1 & 2, Jack, PCB 180 | • | | • | Solder | | • | (2) | • | • | | |
| Type B | • | | 48h | Type 1 & 2, Jack, PCB 180 | • | | • | Solder | | • | (2) | • | • | | |
| Micro USB Swift | | | 48h | • | | | | | | • | (2) | • | • | | -30°C - 80°C, IP67/IP68 (Unmated) |
| Micro USB Swift-MU | | | 48h | | | | • | | | • | (2) | • | • | | -40°C - 80°C, IP67 (Mated) |
| Type C Swift-LP | | • | 48h | • | | | | | | • | (2) | • | • | | -40°C - 85°C, IP67 (Unmated) |
| Type C Swift-LA | • | | 48h | • | | | • | | | • | (2) | • | • | | ◦ **R0:** -40°C - 85°C, IP68 (Unmated)<br>◦ **OC:** -20°C - 85°C, IP67 (Mated) |
| Type C Swift-GG | • | • | 48h | • | | | • | | | • | (2) | • | • | | ◦ **R0:** -40°C - 85°C, IP67 (Unmated)<br>◦ **OC:** -20°C - 85°C, IP67 (Mated) |
| Type C Swift-XL | • | | 48h | | | | • | | | • | (2) | • | • | | ◦ **OC:** -20°C - 85°C, IP68 (Mated) |
| **D-SUB Series** | | | | | | | | | | | | | | | |
| Standard | | | 8h | Solder, PCB 90& 180 | | | • | Solder, Crimp | | | (2) | • | • | | ◦ **R0:** -40°C - 105°C, IP68 (Unmated)<br>◦ **OC:** -20°C - 85°C, IP67P (Mated)<br>◦ **FI:** -40°C - 105°C, IP67 (Mated) |
| High Density | | | 8h | Solder, PCB 90& 180 | | | • | Solder, Crimp | | | (2) | • | • | | |
| **SSL Series** | | | | | | | | | | | | | | | |
| SSL1.1 | | | | • | | | • | | | • | (2) | | • | CSA C22.2, UL1977 | -40°C - 105°C, Non-IP |
| SSL1.2 | | | | • | | | • | • | • | • | (2) | | • | CSA C22.2, UL1977, cUL UL2238+UL50e | -40°C - 105°C, IP68 (Mated) |
| **HDMI Series** | | | | | | | | | | | | | | | |
| Circular | | | 48h | • | | | • | | | 94V-HB | (2) | • | • | | ◦ **R0:** -20°C - 85°C, IP67 (Unmated)<br>◦ **OC:** -20°C - 85°C, IP67P (Mated) |
| Rectangular | | | 48h | • | | | • | | | 94V-1 | (2) | • | • | | |
| Mini-HDMI | | | 48h | • | | | • | | | • | (2) | • | • | | |
| **DVI Series** | | | | | | | | | | | | | | | |
| DDD | | | 8h | • | | | • | | | | (2) | | • | | ◦ **R0:** -40°C - 105°C, IP68 (Unmated)<br>◦ **OC:** -20°C - 85°C, IP67P (Mated) |
| DDS | | | 8h | • | | | • | | | | (2) | | • | | |
| DID | | | 8h | • | | | • | | | | (2) | | • | | |
| DIS | | | 8h | • | | | • | | | | (2) | | • | | |

Remarks:
Assemble Style: **R0** (Receptacle), **RW** (Receptacle With Wires), **RP** (Receptacle With Pigtail), **OC** (Overmolded With Cables), **FI** (Field Installable)
Vibration: **(2)** 10-55Hz @Amplitude 1.52mm
Operation Temperature & IP Rating: **R0** (Receptacle), **RW** (Receptacle With Wires), **RP** (Receptacle With Pigtail), **OC** (Overmolded With Cables), **FI** (Field Installable)

# Product Selection Guide

## Other IO (Fiber, RF)

| | Mating Style | | Materials | No. of Contacs | Gold Plated | Operating Voltage (AC/DC) | Applicable Wires (AWG) | Mating Cycles (Pin Contact) | Salt Spray (Connector, Mated) | R0 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3 Points Lock | Screw Thread | | | | | | | | |
| **Fiber Optic Series** | | | | | | | | | | |
| LC | • | | | | | | | | 48h | • |
| SC | • | | | | | | | | 48h | • |
| **RF Series** | | | | | | | | | | |
| SMA Type | | • | M | 1 | • | 335 Volts RMS At Sea Level | 1.13mm, 1.32mm, 1.37mm, RG178 | 500 | 48h | • |
| N Type | | • | M | 1 | • | 1,000 Volts RMS At Sea Level | 1.13mm, 1.32mm, 1.37mm, RG142, RG178, G58 A/U | 500 | 48h | • |

## Other (ZConnect, Cable Joiner, Cable Gland, Pressure Relief Vent, LED)

| | Mating Style | | | Materials | No. of Contacs | Contacts | | | | Operating Voltage (AC/DC) | Nominal Current | Applicable Wires (AWG) | Salt Spray (Connector, Mated) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Push Lock With Latch | Screw Thread | Others | | | Gold Plated | Nickel Plated | Thermo plastic | SUS316L | | | | |
| **ZConnect Series** | | | | | | | | | | | | | |
| FPC / FFC / WTB | | | Quick Plug | B | 46, 36, 20, 18, 12 | • | | | | 120V | 1A | | 48h |
| **Cable Joiner Series** | | | | | | | | | | | | | |
| M20 | | • | | P | None, 4 | • | | | | | 10A | 22-16 | |
| M32 | • | | | P | None, 4 | • | | | | | 15A-30A | 16-10 | |
| FICX I Tube (11) | | • | | P | 2-5 | | • | | | 450V (Non-UL) 600V (UL) | 16A-30A | 20-12 | |
| FICX I Tube (12) | | • | | P | 2-5 | | • | | | 450V (Non-UL) 600V (UL) | 8A-20A | 18-12 | |
| FICX XI Tube (13) | | • | | P | 2-5 | | • | | | 450V (Non-UL) 600V (UL) | 8A-20A | 18-12 | |
| FICX T Tube (T2) | | • | | P | 2-5 | | • | | | 450V (Non-UL) 600V (UL) | 10A-20A | 20-12 | |
| **Cable Gland Series** | | | | | | | | | | | | | |
| Cable Gland | | • | | B | | | | | | | | | |
| **Pressure Relief Vent** | | | | | | | | | | | | | |
| M6 Plastic | | • | | P | | | | • | | | | | 1,000h |
| M12 Snap-in | | • | | P | | | | • | | | | | 1,000h |
| M12 Stainless | | • | | M | | | | | • | | | | 1,000h |
| M12 Plastic | | • | | P | | | | • | | | | | 1,000h |
| M12 Metal | | • | | M | | | • | | | | | | 48h |
| **LED Light Guide** | | | | | | | | | | | | | |
| Ø3mm | | | | B | | | | • | | 4V | | | |
| Ø5mm | | | | M | | | | • | | 4V | | | |

Remarks:
Materials: **P** (Plastic), **M** (Metal), **B** (Both)
Assemble Style: **R0** (Receptacle)

# Product Selection Guide

| | FI | UV Resistant | UL 94V-0 | EMI Option | ROHS 2.0 & REACH | Standard / Compliant / Certifications | Operating Temperature & IP Rating |
|---|---|---|---|---|---|---|---|
| **Fiber Optic Series** | | | | | | | |
| LC | • | • | • | | • | | -40°C - 105°C, IP67 (Mated) |
| SC | • | • | • | | • | | -40°C - 105°C, IP67 (Mated) |
| **RF Series** | | | | | | | |
| SMA Type | | | | • | • | MIL-C-39012 | -40°C - 105°C, IP68 (Unmated) |
| N Type | | | | • | • | MIL-C-39012 | -40°C - 105°C, IP68 (Unmated) |

| | Receptacle | Field Installable | UV Resistant | UL 94V-0 | Vibration | ROHS 2.0 & REACH | Certifications | IP Rating | Operating Temperature |
|---|---|---|---|---|---|---|---|---|---|
| **ZConnect Series** | | | | | | | | | |
| FPC / FFC / WTB | | | | • | | • | | | -40°C - 110°C, Non-IP |
| **Cable Joiner Series** | | | | | | | | | |
| M20 | | • | • | 94V-2 | | • | | IP67 | -40°C - 105°C |
| M32 | | • | • | • | | • | UL6703A | IP67 | -40°C - 105°C |
| FICX I Tube (11) | | • | • | • | | • | CSA, UL2238 | IP68 (Mated) | -40°C - 105°C |
| FICX I Tube (12) | | • | • | • | | • | CSA, UL2238 | IP68 (Mated) | -40°C - 105°C |
| FICX XI Tube (13) | | • | • | • | | • | CSA, UL2238 | IP68 (Mated) | -40°C - 105°C |
| FICX T Tube (T2) | | • | • | • | | • | CSA, UL2238 | IP68 (Mated) | -40°C - 105°C |
| **Cable Gland Series** | | | | | | | | | |
| Cable Gland | • | • | | 94V-0<br>94V-2 | (2) | • | | IP67 (Mated)<br>IP68 (Mated) | ◦ **R0:** -20°C - 105°C<br>◦ **FI:** -20°C - 105°C |
| **Pressure Relief Vent** | | | | | | | | | |
| M6 Plastic | • | | • | • | | • | | IP66, IP68 | -40°C - 125°C |
| M12 Snap-in | • | | • | • | | • | | IP68, IP69K | -40°C - 125°C |
| M12 Stainless | • | | • | • | | • | | IP68, IP69K | -40°C - 125°C |
| M12 Plastic | • | | • | • | | • | | IP68, IP69K | -40°C - 125°C |
| M12 Metal | • | | • | • | | • | | IP68, IP69K | -40°C - 125°C |
| **LED Light Guide** | | | | | | | | | |
| Ø3mm | • | | | | | | | IP67 | ◦ **Red & Green:** -30°C - 80°C<br>◦ **Others:** -40°C - 80°C |
| Ø5mm | • | | | | | | | IP67 | ◦ **Red & Green:** -30°C - 80°C<br>◦ **Others:** -40°C - 80°C |

Remarks:
Assemble Style: **FI** (Field Installable)
Vibration: **(2)** 10-55Hz @Amplitude 1.52mm
Operation Temperature & IP Rating: **R0** (Receptacle), **FI** (Field Installable)

# Served Markets & Applications

| Applications | Ceres | X-Lok | M series | FLOS & FLOS+ | Power | RBL | HS-Lok | NMEA 2000 | 7/8" Mini | Heavy Duty Shielded | RJ45 | USB | SSL | HDMI | DVI | Fiber Optics | Zconnect | RF | Cable Joiner | Cable Gland | Vent | LED Light Guide | D-Sub |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LED Lighting** | | | | | | | | | | | | | | | | | | | | | | | |
| Architectural Lighting | • | • | • | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| Outdoor LED Displays | • | • | • | • | • | • | | | • | | • | | • | | | | • | | • | • | • | | |
| Outdoor Signage | • | • | | | • | • | | | • | | • | | • | | | | • | | • | • | • | | |
| Entertainment Lighting & Systems | • | • | | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| Smart City, Street Lighting | • | • | | | • | • | | | • | | • | | • | | | | • | | • | • | • | | |
| Tunnel Lighting | • | • | • | | • | • | | | • | | • | | • | | | | • | | • | • | • | | |
| Parking Lighting | • | • | | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| Cruise & Shipyards Lighting | • | • | • | | • | • | • | • | • | | • | | • | | | | • | | • | • | • | | |
| High Speed Train & EV Bus | • | • | | | • | • | • | | • | • | • | | • | | | | • | | | • | • | | |
| Commercial Lighting | • | • | • | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| Refrigeration Lighting | • | • | • | | • | • | • | | • | | • | | • | | | | • | | | • | • | | |
| Horticulture Lighting | • | • | • | | • | • | | | • | | • | | • | | | | • | | • | • | • | | |
| Warehouse Lighting | • | • | | | • | • | | | • | | • | | • | | | | • | | • | • | • | | |
| Emergency Lighting | • | • | • | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| UV and Sanitary Lighting | • | • | • | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| Li-Fi | • | • | | | • | • | | | | | • | | • | | | | • | • | • | • | • | | |
| Hospital Surgical Lighting & Room | • | • | • | | • | • | • | | • | | • | | • | | | | • | | • | • | • | | |
| ATEX Lighting | • | • | | | • | • | • | | | | | | • | | | | • | | | | | | |
| Underwater / Submerged Lighting | • | • | | | • | • | | | | | | | • | | | | • | | | | • | | |
| **Marine** | | | | | | | | | | | | | | | | | | | | | | | |
| Multi-FunctionDisplay | • | • | • | • | • | • | | • | • | • | • | • | | • | • | | • | • | | | • | • | • |
| Outboard Motors | • | • | • | | • | • | | • | • | • | | | | | | | • | | | • | | | |
| Bilge Pump | • | • | • | | • | • | | • | • | • | | | | | | | • | | | • | | | |
| Heater | • | • | • | | • | • | • | • | • | • | • | | | | | | • | | • | • | • | | |
| HVAC (Heating Ventilation Air Conditioning) | • | • | • | | • | • | • | • | • | • | • | | | | | | • | | • | • | • | | |
| Fridge | • | • | • | | • | • | • | • | • | • | | | | | | | • | | | | | | |
| Docking System | • | • | • | | • | • | | • | • | • | | | | | | | • | | | • | | | |
| Windlass | • | • | • | | • | • | | • | • | • | | | | | | | • | | | • | | | |
| Sensors | • | • | • | | • | • | | • | • | • | | | | | | | • | | | | | | |
| RADAR | • | • | • | | • | • | • | • | • | • | • | • | | | | | • | • | | | | | |
| Antenna | | | • | | | | • | • | • | • | | | | | | | • | • | | | | | |
| USB Charger | • | • | • | | • | • | • | • | • | • | | • | | | | | • | | • | | | | |
| Audio System | • | • | • | | • | • | • | • | • | • | • | • | | • | | | • | | • | • | • | | |
| Lighting System | • | • | • | | • | • | • | • | • | • | • | • | • | • | | | • | | • | • | • | | • |
| CCTV | • | • | • | | • | • | • | • | • | • | • | • | | • | • | | • | | | | | | |
| Power Controller | • | • | • | | • | • | | • | • | • | | | | | | | • | | • | • | • | | • |
| Autopilot System | • | • | • | | • | • | | • | • | • | | | | • | • | | • | • | | | • | | • |
| Automatic Identification System | • | • | • | | • | • | • | • | • | • | • | | | • | • | | • | • | | | • | | • |
| GPS, Beacon & Lifebuoy | • | • | • | | • | • | • | • | • | • | • | • | | | | | • | • | | | | | |
| Sonar / Transducer | • | • | • | | | | | • | • | | | | | | | | • | | | | | | |
| Fish-Finders | • | • | • | | | | | • | • | • | • | • | | | | | • | | | | | | |
| Chartplotter | • | • | • | | | | • | • | • | • | • | • | | • | • | | • | | | | | | • |
| Sailing Instruments | • | • | • | | | | | • | • | • | • | • | | • | • | | • | | | | • | | • |
| Shipyards & Cruise | • | • | • | | | | • | • | • | • | • | • | | • | • | | • | | | | • | | • |
| **Broadband Wireless Access** | | | | | | | | | | | | | | | | | | | | | | | |
| General Small Cells | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | • | • |
| RRH (Remote Radio Head) | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | | |
| Wireless Mobile Backhaul | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | | |
| High Capacity Mobile Subscriber Unit | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | • | |
| Outdoor Base Station Unit | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | • | |
| Outdoor LTE | • | • | | | • | • | • | | • | • | • | | | | | | • | • | • | • | • | • | |
| Outdoor AP | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | | • |
| Subscriber Station | • | • | | | • | • | • | | • | • | • | | | | | • | • | • | • | • | • | • | |
| Outdoor Wireless Mesh Router | • | • | • | | • | • | • | | • | • | • | • | | | | • | • | • | • | • | • | | |
| Base Station Power Supply | • | • | | • | • | • | • | | • | • | | | | | | | • | • | • | • | • | • | |
| Communication System | | | | | | | | | | | | | | • | | | • | | | | | | |

# Served Markets & Applications

| Applications | Ceres | X-Lok | M series | FLOS & FLOS+ | Power | RBL | HS-Lok | 7/8" Mini | Heavy Duty Shielded | RJ45 | USB | SSL | HDMI | DVI | Fiber Optics | Zconnect | RF | Cable Joiner | Cable Gland | Vent | LED Light Guide | D-Sub |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Industrial Automation** | | | | | | | | | | | | | | | | | | | | | | |
| Robotic Arm | | | • | • | | | • | • | • | | | | | | | • | | | | | | |
| Industrial Server / Network | • | • | • | • | • | | • | • | • | • | • | | • | • | • | • | • | | | • | • | • |
| Industrial Forklifts (Truck) | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | | | • | • | | • |
| AVI (Automatic visual inspection) | • | • | • | • | | | • | • | • | | | | | | | • | | | | | | |
| Data Communication System | • | • | • | • | • | | • | • | • | • | • | | • | • | | • | • | | | • | • | • |
| Industrial Control Center | • | • | • | • | • | | • | • | • | • | • | | • | • | | • | | | | • | • | • |
| Packaging Center | • | • | • | • | | | • | • | • | | | | | | | • | | | | | | |
| Conveyors | • | • | • | • | | | • | • | • | | | | | | | • | | | | | | |
| Sensors | | | • | | | | | • | • | | | | | | | • | | | | | | |
| Power Distribution | • | • | • | • | • | | | • | • | | | | | | | • | | | | | | |
| Actuators | • | • | • | | | | | • | • | | | | | | | • | | | | | | |
| Motor Drives | • | • | • | | • | • | | • | • | | | | | | | • | | | | | | |
| Industrial PC & Displays | • | • | • | • | • | | • | • | • | • | • | | • | • | | • | • | | | • | • | • |
| Machine Tools | • | • | • | • | • | | | • | • | | | | | | | • | | | | | | |
| Switches | | • | • | | | | | • | • | • | • | | | | | • | | | | | | • |
| Production Equipment | • | • | • | • | • | • | • | • | • | • | • | | | | | • | | | | • | • | • |
| **Renewable Energy** | | | | | | | | | | | | | | | | | | | | | | |
| PV / DC Inverter | • | • | • | | • | • | | • | • | • | | | | | | • | | • | • | • | • | |
| Micro Inverter | | | | | | • | | | | | | | | | | • | | | • | • | • | |
| CSP & CPV | • | • | • | | • | • | | • | • | | | | | | | • | | | • | • | • | |
| Heliostat | • | • | • | | • | • | | • | • | | | | | | | • | | | • | • | • | |
| PV Trackers | • | • | • | | • | • | | • | • | | | | | | | • | | | • | • | • | |
| PV ICS (Integrated Control Systems) | | | | | • | • | | • | • | • | | | | | | • | | | • | | • | |
| Portable Energy | • | • | • | | • | • | • | • | • | • | • | | | | | • | | | | | | |
| Communication System | • | • | • | • | • | • | | • | • | • | • | | • | • | • | • | • | | • | • | • | • |
| PDC (Power Distribution Control) | • | • | • | • | • | • | | • | • | • | | | | | | • | • | | • | • | • | • |
| Wind Turbine | • | • | • | • | • | • | | • | • | • | | | | | | • | | | • | • | • | • |
| Energy Storage System | • | • | • | | • | • | | • | • | • | | | | | | • | | | • | • | • | |
| Tidal Power Generation System | • | • | • | • | • | • | | • | | • | | | | | | • | | | • | • | | • |
| **Heavy Equipment** | | | | | | | | | | | | | | | | | | | | | | |
| Electronic Toll System | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| Automotive Diagnotics | • | • | • | • | • | | • | • | • | • | • | • | • | • | | • | • | | | | • | • |
| Agriculture Electronic Equipment | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| Lidar & Radar | • | • | • | • | | | | • | • | • | • | | • | • | | • | | | | | | |
| ADAS (Advanced Driver Assistance Systems) | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| Telematics & Tracking | • | • | • | | • | • | • | • | • | • | • | | • | • | | • | • | • | • | • | • | • |
| Camera & Monitoring | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| Control System | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| Display | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| GPS System | • | • | • | • | • | • | • | • | • | • | • | | | | | • | • | | • | • | | |
| Lighting | • | • | • | | • | • | | • | • | | | • | | | | • | | • | • | | | |
| Measurement Systems | • | • | • | • | • | • | • | • | • | • | • | | • | • | | • | • | | • | • | | • |
| Sensors | | • | • | • | | | • | • | • | | | | | | | • | | | | | | |
| **Automated Meter Reading** | | | | | | | | | | | | | | | | | | | | | | |
| Water Meter | • | • | • | • | | | • | | | • | • | | | | | • | • | | • | • | • | |
| Electricity Meter | • | • | • | • | | | • | | | • | • | | | | | • | • | | • | • | • | |
| Gas Meter | • | • | • | • | | | • | | | • | • | | | | | • | • | | • | • | • | |
| Alarm System | • | • | • | • | | | • | | | • | • | | | | | • | • | | • | • | • | |
| Military Drone | • | • | • | • | | | • | | | | | | | | | • | • | | • | • | • | |
| Vehicle Tracking | • | • | • | • | | | • | | | • | • | | | | | • | • | | • | • | • | |
| Telemetry | • | • | • | • | | | • | | | • | • | | | | | • | • | | • | • | • | |
| Sewage | • | • | • | • | • | • | • | | | • | • | | | | | • | • | | • | • | • | |
| **Rugged IT** | | | | | | | | | | | | | | | | | | | | | | |
| Telemetry | | • | • | • | | | • | | | • | | | | | | • | • | | • | • | | |
| Rugged & Military VR and AR | | • | • | • | | | • | | | | • | | | | | • | • | | • | | | |
| Rugged Notebook | | | | • | | | | | | • | • | | • | • | | • | • | | | | | • |
| Night Vision Goggles | | | • | • | | | • | | | | • | | | | | • | | | | | | |
| Miniature Camera | | | | | | | | | | | • | | | | | • | • | | | | | |
| Rugged Tablet | | | | | | | | | | | • | | • | • | | • | • | | | | | |
| Communication Devices | | | | • | | | | | | • | • | | • | • | | • | • | | | | • | • |

# Served Markets & Applications

| Applications | Ceres | X-Lok | M series | FLOS & FLOS+ | Power | RBL | HS-Lok | 7/8" Mini | Heavy Duty Shielded | RJ45 | USB | SSL | HDMI | DVI | Zconnect | RF | Cable Gland | Vent | LED Light Guide | D-Sub |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Test Equipments** | | | | | | | | | | | | | | | | | | | | |
| Air Flow Measurement | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Gas Detectors | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Precision Surveying | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | | • |
| Earthquake Monitoring | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Humidity Measurement | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Leak Detectors | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Light Measuring | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Sound Measuring | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Water Measurement | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Weighing Devices | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | • | • | | |
| Weigh Modules | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | • | • | | |
| Heavy-duty Scales | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | | • |
| Floor Scales | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | | • |
| Wet Area Weighing | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Dosing Systems | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| In-Motion Weighing | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Borescope | • | • | • | • | | | • | • | • | • | • | | | | • | • | | • | | |
| Image Measurement | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Timers / Timer Display | • | • | • | • | | | • | • | • | • | • | | | | • | • | | • | | |
| Laser Marking System | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | • | | |
| Digital Microscopes | • | • | • | • | | | • | • | • | • | • | | | | • | • | | • | | |
| **Hybrid Electric Vehicles** | | | | | | | | | | | | | | | | | | | | |
| Electric Wheelchair | • | • | • | • | • | • | • | • | • | | | | | | • | | | | | |
| Electrical and Electronic Speed Control | • | • | • | • | • | • | • | • | • | | | | | | • | | | | | |
| Electrical and Electronic Brake System | • | • | • | • | • | • | • | • | • | | | | | | • | | | | | |
| Throttle Controller | • | • | • | • | • | • | • | • | • | | | | | | • | | | | | |
| Battery Module | • | • | • | | • | | | • | • | • | • | • | | | • | | • | • | | |
| Motor Module | • | • | • | • | | | | • | • | • | • | • | | | • | | • | • | | |
| Gear Shift Module | • | • | • | | | | | • | • | • | • | • | | | • | | | • | | |
| Controller Unit | • | • | • | • | | | | • | • | • | • | • | | | • | | | • | | |
| Charge Plug / Inlet | • | • | | | • | | | • | • | • | • | • | | | • | | | • | | |
| Charging Station | • | • | | | • | | | • | • | • | • | • | | | • | | | • | | |
| Home Charge Platform | • | • | | | • | | | • | • | • | • | • | | | • | | | • | | |
| Hoverboard | • | • | • | • | • | | | • | • | • | • | • | | | • | | | • | | |
| Electric Scooter | • | • | • | • | • | • | • | • | • | | | | | | • | | • | | | |
| **Railway Mass Transit** | | | | | | | | | | | | | | | | | | | | |
| Infotainment Systems | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | • | • | • | • |
| In-Vehicle Information System | • | • | • | • | • | | • | • | • | • | • | | • | • | • | | • | • | • | • |
| Indication Display | • | • | • | • | • | | • | • | • | • | • | | • | • | • | | | • | | • |
| Navigation/GPS | • | • | • | | | | • | • | • | • | • | | • | • | • | • | | | | • |
| HVAC (Heating Ventilation Air Conditioning) | • | • | • | • | • | | • | • | • | • | | | | | • | | | | | |
| Fuel Leakage Detector | • | • | • | • | • | • | • | • | • | • | • | | | | • | | | | | |
| Broadcasting System | • | • | • | • | • | | • | • | • | • | • | | | | • | | • | | | |
| Vehicle Monitoring | • | • | • | • | • | | • | • | • | • | • | | • | • | • | | | • | | • |
| Cleaning Control | • | • | • | • | | • | • | • | • | • | • | | | | • | | | | | |
| Speedometer | • | • | • | • | | | • | • | • | | | | | | • | | | | | |
| Interior Lighting | • | • | • | • | • | | • | • | • | • | • | • | | | • | | | • | | |
| **Mobile Devices** | | | | | | | | | | | | | | | | | | | | |
| DRC (Drone Remote Controller) | • | • | • | • | | | • | | | | • | | | | • | • | | | | |
| Altimeter | • | • | • | • | | | • | | | | • | | | | • | • | | | | |
| Barcode Reader | • | • | • | • | | | • | | | | • | | | | • | | | | | |
| GPS Safety Guard | | • | | | | | • | | | | • | | | | • | • | | | | |
| Portable Lamp | • | • | | | | | • | | | | • | | | | • | | | | | |
| Gesture Measurement | • | • | | | | | • | | | | • | | | | • | | | | | |
| Wearables | | | | | | | | | | | • | | | | • | • | | | | |

# Served Markets & Applications

| Applications | Ceres | X-Lok | M series | FLOS & FLOS+ | Power | RBL | HS-Lok | 7/8" Mini | Heavy Duty Shielded | RJ45 | USB | SSL | HDMI | DVI | Zconnect | RF | Cable Joiner | Cable Gland | Vent | LED Light Guide | D-Sub |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Transportation** | | | | | | | | | | | | | | | | | | | | | |
| Vehicle Camera | • | • | • | • | | • | • | | | | • | | • | | • | | | • | • | | |
| Switch | | | • | | | | | | | • | • | | | | • | | | | | | • |
| Dome Vehicle Camera | • | • | • | | | • | | | | | | | | | • | | | | | | |
| RFID Reader | | | | | | | | | | | | | | | • | • | | | | | |
| Bus GPS | • | • | • | • | | • | • | | | • | • | | • | • | • | • | | | | | |
| Displayer | • | • | • | • | | • | | | | | | | | | • | | | | | | |
| Outdoor Speaker | • | • | • | • | | • | | | | | | | | | • | | | | | | |
| Automotive Winches | | | | | | | | | | | | | | | • | | | | | | |
| Vehicle Charger | • | • | • | | | • | | | | | | | | | • | | | | | | |
| Wifi Router | | | | | | | | | | • | | | | | • | | | | | | |
| Fleet Management | • | • | • | • | | • | | | | | | | | | • | | | | | | |
| Digital Video Surveillance System | • | • | • | • | • | • | | • | • | • | | | | | • | | | | | • | |
| **Medical Equipment** | | | | | | | | | | | | | | | | | | | | | |
| Medical Displays | | | | • | • | | | | | • | • | | • | • | • | | | | • | | • |
| Mobile Nursing Carts | • | • | | | • | • | • | • | • | | | | | | • | | | • | • | | |
| Non-invasive Devices | • | • | | • | • | • | • | • | • | • | • | | • | • | • | | | • | • | | • |
| Electrical Beds | • | • | • | | • | • | | • | • | | | | | | • | | | • | • | | |
| Charges | • | • | | | • | • | | • | • | | | | | | • | | | • | • | | |
| Wheelchair Lift | • | • | | | • | • | | • | • | | | | | | • | | | • | • | | |
| Wheelchair Stair Lift | • | • | | | • | • | | • | • | | | | | | • | | | • | • | | |
| Rehabilitation System | • | • | | | • | • | | • | • | | | | | | • | | | • | • | | |
| **Automotive Diagnostics** | | | | | | | | | | | | | | | | | | | | | |
| Auto Crash Notification | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | | | | • |
| Vehicle Tracking | • | • | • | | • | • | • | • | • | | • | | | | • | • | | | • | | |
| Vehicle Health Alert & Roadside Assistance | • | • | • | • | • | • | • | • | • | • | • | | | | • | • | | | | | • |
| Remote Vehicle Diagnostics | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • |
| **UAV** | | | | | | | | | | | | | | | | | | | | | |
| Commercial Drone | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | • | • | • |
| Military Drone | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | • | • | • |
| Consumer Drone | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | | • | • | • | • |
| **Lifts & Materials Handling** | | | | | | | | | | | | | | | | | | | | | |
| Forklift | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | | • | • | • | • |
| Industrial Lift | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | | • | • | • | • |
| Materials Handling | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | | | • | • | • | • |
| **Remote Video Response Center** | | | | | | | | | | | | | | | | | | | | | |
| Encoders | • | • | • | • | • | | • | • | • | • | • | | • | • | • | • | | | • | • | • |
| Monitoring Station | • | • | • | | • | • | | • | • | • | • | | • | • | • | | | • | | | • |
| CCTV/Dome/IP Camera | • | • | • | • | • | | • | • | • | • | • | | • | • | • | • | • | • | • | • | • |
| Remote Control | • | • | | | • | | • | | | • | • | | | | • | | | • | | | |
| Junction Box | • | • | | | • | | | | | • | • | | • | • | • | | | • | • | | • |
| Automatic LPRS (License Plate Recognition System) | • | • | • | • | • | | • | • | • | • | • | | • | • | • | • | • | • | • | • | • |
| Fingerprint ID | | | | | | | | | | | • | | | | • | | | | | | |
| Alarm System | • | • | • | • | • | | • | | | • | • | | • | • | • | • | • | • | • | • | • |
| Sensor | | | • | | | | | | | | | | | | • | | | | | | |
| **Autonomous** | | | | | | | | | | | | | | | | | | | | | |
| GPS | • | • | • | • | | | • | • | • | • | • | | • | • | • | • | | | | | |
| Lidar | • | • | • | • | | | • | • | • | • | • | | • | | • | | | • | • | | |
| Radar Sensors | • | • | • | • | | | • | • | • | | | | | | • | • | | | | | |
| Video Cameras | • | • | • | • | | | • | • | • | | • | | • | | • | | | • | • | | |
| Central Computer | • | • | • | • | | | • | • | • | • | • | | • | | • | | | | | | |
| Inertial Measurement Unit | • | • | • | • | | | • | • | • | | | | | | • | | | • | | | |
| Inertial Navigation Systems | • | • | • | • | | | • | • | • | | | | | | • | • | | • | | | |
| **Commercial Military** | | | | | | | | | | | | | | | | | | | | | |
| Tank | | | | • | | | | | | | | | | | | | | | | | |
| Aircraft | | | | • | | | | | | | | | | | | | | | | | |
| Warship | | | | • | | | | | | | | | | | | | | | | | |
| Dismounted Soldier | | | | • | | | | | | | | | | | | | | | | | |
| Software Defined Radios | | | | • | | | | | | | | | | | | | | | | | |
| Commercial Military | | | | • | | | | | | | | | | | • | | | | | | |

# We Are Amphenol LTW

Founded in 1993, Amphenol LTW is a leader in rugged and harsh environment interconnects with the largest array of I/O and products ranging from IP65 to IP69K. The company continually provides innovative interconnect solutions for ever-demanding environments and is proactively committed to contributing to a safer and greener environment. Amphenol LTW features interconnects for technologically advanced products with environmentally friendly results.

## Amphenol LTW Technology & CNC Plant

- Headquarters: Taipei, Taiwan
- 150 Employees

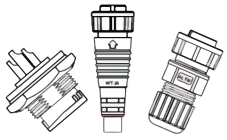

## Kunshan Amphenol Zhengri Electronics

- Kunshan, China
- 400 Employees

**110+**
**Amphenol Divisions**

**75+**
**Distribution Channels**

**30+**
**Market Applications**



**80,000+**
**Products**

Visit our website for more information

**Scan here**

# Our Capabilities

Both factories located in Taiwan and China are ISO9001:2015, ISO14001:2015, and UL certified. Our Test Laboratory is certified by TAF and is a member of UL WTDP reliable partner. Wherever required, most of our products are TUV/VDE, UL/CSA certified. Thanks to our strict standards, we are able to contribute to your projects and design exactly what you need. From standard to customized products, Amphenol LTW has the right solutions for your applications.

**Test Laboratory Accreditations** **Quality Assurance** **International Certifications**

## Automated Production Line

Capability: Contacts, Parts, and Shells

Number of Automatic Machines: 11
Production Capacity : 125,000 pins per day (24 hours)

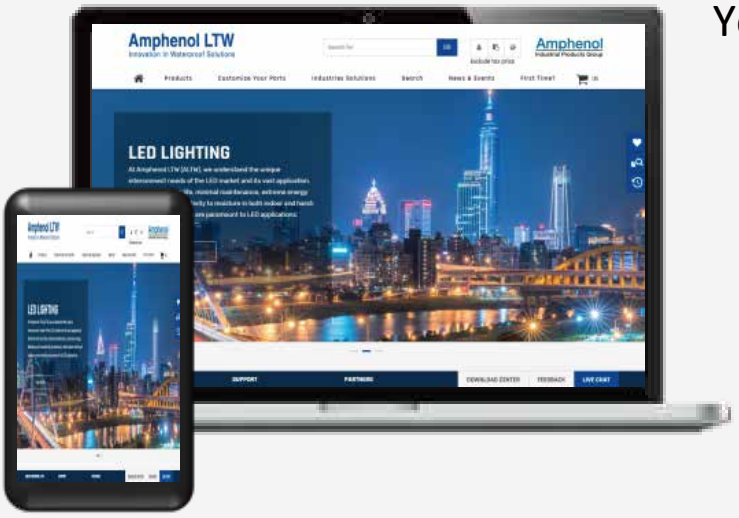
Number of CNC Machines: 33
Production Capacity : 125,000 pins per day (24 hours)

## Kunshan Factory – Horizontal Injection Workshop

Molding Machines
Number of Machines: 17

Production Capacity : 3,400pcs/hr

# Online Resources




## Your Solution Only **One Click Away**

### Our E-SHOP

Visit our website to find all our products, prices and technical data. Online ordering is easier now!

**amphenolltw.com**

Scan our **QR Code**

Visit the online shop

## Our Catalog

**Product catalogs are available on our website.**

**Download for more details:**
**amphenolltw.com**

**Scan for more details**

**General Catalog**

Find All Product Range

**Catalogs by Series**

All Market Applications

**Market Flyer**

Product Guidance

# Customization Services


Fast

Efficient

## Configure To Order (CTO)

Configure your own connector/cable assembly directly on our website by choosing the components and parts that you need.

**amphenolltw.com**

## Benefits

- ✓ Worldwide access 24/7
- ✓ Easy & quick customization
- ✓ Real time order tracking
- ✓ Online assistance (Live Chat)
- ✓ Instant drawing release
- ✓ Instant quote
- ✓ Order online

Scan the QR Code to our CTO platform

**Scan here**

## Just A Few Simple Steps

1 Sign In → 2 Configure → 3 Confirm → 4 Quote → 5 Order

NEW

# $3^3$ Single Pair Ethernet

## *Freedom of Choices and Budgets*

***3*** Mechanical interfaces IP67 and above for industrial and ruggedized applications

***3***dom of choices for your needs and requirements

***3*** Budgets, pay for what you need

## Features

» ALTW's proprietary SPE interface integrated in **M8 (G8) / M12 / FLOS+ / X-Lok**

» Providing low power & simply networking on end-point sensors

» Cost-effective, smaller & lighter than standard 4 pairs ethernet cable

» Compatible 10/100/1000 base-T1 data rates as existing technologies **

» Receptacle IP67 ***UNMATED*** waterproof, also available in double ended and field installable

» Vibration resistance 20g (10 ~ 2,000 Hz)

» Supports PoDL (Power Over Data Lines)

** 24~26 AWG Standard Length 15m

## Part Number

### X-Lok

| | |
|---|---|
| A Size | AD-02BFFM-QL8P⑩ (Cable) |
| | AD-02BMMM-QL8P⑩ (Cable) |
| | AD-02PMMP-QC8001 (Receptacle) |
| | AD-02PMMS-QC8001 (Receptacle) |

### FLOS+

| | |
|---|---|
| K Series | SLKC-S02FMMM-GCP-C⑩ (Cable) |
| | SLKC-S02EEFP-GCP-001 (Receptacle) |

### M Series

| | | | |
|---|---|---|---|
| M8 | M8-02BFFM-SL7C⑩* (Cable) | M12 | M12A-02BFFM-SL8C⑩ (Cable) |
| | M8-02BMMM-SL7C⑩* (Cable) | | M12A-02BMMM-SL8C⑩ (Cable) |
| | M8-02PFFP-SF7001* (Receptacle) | | M12A-02PFFP-SF8001(Receptacle) |
| | M8-02PMMP-SF7001* (Receptacle) | | M12A-02PMMP-SF8001(Receptacle) |
| | M8-02PFFS-SF7001* (Receptacle) | | |
| | M8-02PMMS-SF7001* (Receptacle) | | |
| G8 | 8A-02BFFM-SL7C⑩* (Cable) | | |
| | 8A-02BMMM-SL7C⑩* (Cable) | | |
| | 8A-02PFFP-SF7001* (Receptacle) | | |
| | 8A-02PFFS-SF7001* (Receptacle) | | |
| | 8A-02MMP-SF7001 (Receptacle) | | |
| | 8A-02PMMS-SF7001 (Receptacle) | | |

SPE

*** Upon Request**

⑩Cable Length: (**01**) 1M ~ (**15**) 15M.

# Technical Support

## Assistance

AIPG WeChat (ID: AIPG2020)
安费诺工业展品集团
微信公众号: AIPG2020

88677416888

## Information

### FAQ

Find answers to frequently asked questions at
https://www.amphenolltw.com/

### Feedback

Any comments about the catalog?
Help us improve the catalog user experience by sharing your suggestions.
Email us at
sales@ltw-tech.com

Follow us on

# HDMI Markets / Applications

Marine

- AIS
- Audio System
- Autopilot System
- Chartplotter
- Sailing Instruments
- Ligting System
- Multi-Function Display
- IP and Infrared CCTV & Cameras
- Shipyards & Cruise

Heavy Equipment

- Display
- Electronic Toll System
- Lidar & Radar
- Measurement Systems
- Telematics & Tracking
- Control System
- Camera & Monitoring
- Automotive Diagnostics
- Agriculture Electronic Equipment
- ADAS (Advanced Driver Assistance Systems)

Medical Equipment

- Medical Displays
- Non-invasive Devices

Remote Video Response Center

- CCTV / Dome / IP Camera
- Encoders
- Junction Box
- Monitoring Station
- Alarm System
- Automatic LPRS

Automotive Diagnostics

- Remote Vehicle Diagnostics

Industrial Automation

- Communication System
- Industrial Control
- Industrial Forklifts
- Industrial Network
- Industrial PC & Displays

Renewable Energy

- Communication System

Autonomous

- Central Computer
- GPS
- Lidar
- Video Cameras

Rugged IT

- Communication Devices
- Rugged Notebook
- Rugged Tablet

Railway Mass Transit

- Infortainment Systems
- In-Vehicle Information
- Navigation / GPS
- Vehicle Monitoring
- Indication Display

UAV

- Commercial Drone
- Consumer Drone
- Military Drone

Transportation

- Bus GPS
- Vehicle Camera

Lifts & Materials Handling

- Forklift
- Industrial Lift
- Materials Handling

Test Equipment

- Floor Scales
- Heavy-duty scales
- Precision surveying

Broadband Wireless Access

- Communication System

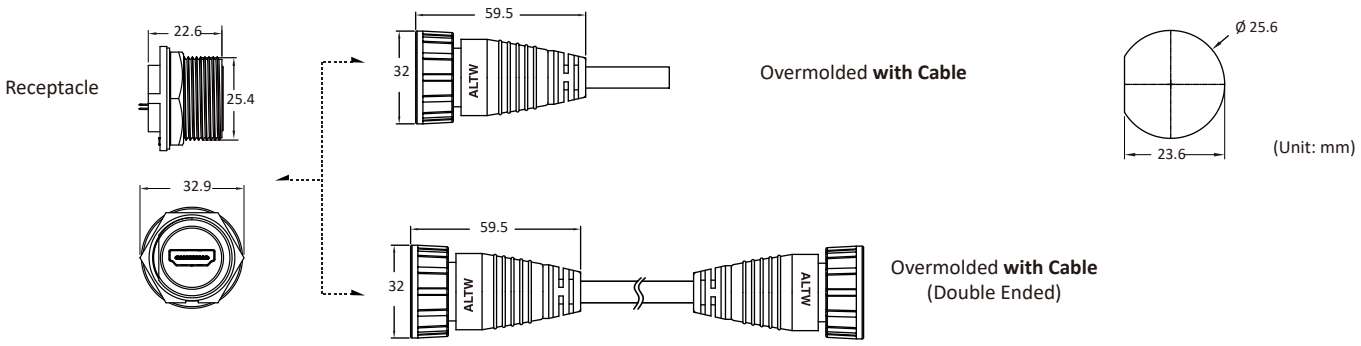
# Product Range Overview

| Sub-Series Name | Circular | Rectangular | Mini-HDMI* |
|---|---|---|---|
| Mating Style | Screw Thread | Push Lock With Latch | Screw Thread |
| Plastic Version | ✓ | ✓ | ✓ |
| No. of Contacts | 19 | 19 | 19 |
| Plating of Contacts | Gold Plated | Gold Plated | Gold Plated |
| Operating Voltage (AC/DC) | 30V (AC) | 30V (AC) | 30V (AC) |
| Nominal Current | 0.5A | 0.5A | 0.5A |
| Operating Temperature | • Receptacle: -20°C ~ 85°C<br>• Overmolded with Cable: -20°C ~ 85°C | | |
| Fasten Style of Nut | Front | Front | Front |
| Receptacle | • Nut Torque Value: 5 ~ 8 kgf.cm<br>• Recommended Panel Thickness: 2mm Min. (for Rectangle Type); 4mm Max. (for Rectangle / Circular Type) | | |
| Overmolded With Cable | Cable Information: UL20276, 26AWG (0.14mm$^2$), PVC, Black | | |
| Accessories | ✓ | ✓ | ✓ |
| Applicable Wire Gauge | 26AWG (0.14mm$^2$) | 26AWG (0.14mm$^2$) | 30AWG (0.05mm$^2$) |
| Mating Cycles (Pin Contact) | 500 Cycles | 500 Cycles | 500 Cycles |
| IP Rating | • Receptacle: IP67 (Unmated)<br>• Overmolded With Cable, Field Serviceable/Installable: IP67 (Mated) | | |
| Salt Spray (Connector, Mated) | 48h | 48h | 48h |
| Vibration | Frequency Range 10 ~ 55Hz<br>Amplitude 1.52mm | | |
| RoHS 2.0 Compliant | ✓ | ✓ | ✓ |
| REACH Compliant | ✓ | ✓ | ✓ |

*Upon Request

## >> Circular Type (Screw Thread)

### Panel Cut Out

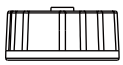



| | | |
|---|---|---|
| Receptacle IP67 (Unmated)<br>HJ-19PMFP-SC7001<br>(Male Conn. Female Contact) | Mate With → | Overmolded **With Cable** (**Straight**) IP67 (Mated)<br>HP-19AFMM-SL7A⑩ (Female Conn. Male Contact)<br><br>Overmolded **With Cable Double Ended** (**Straight**) IP67 (Mated)<br>HP19BL-HPBL-SA⑩* (Female Conn. Male Contact) |

⑩ Cable Length (Single end) **(01)** 1M ~ **(05)** 5M
⑩ Cable Length (Double ended) **(A05)** 0.5M, **(001)** 1M ~ **(005)** 5M

*** Upon Request**

### Waterproof Cap

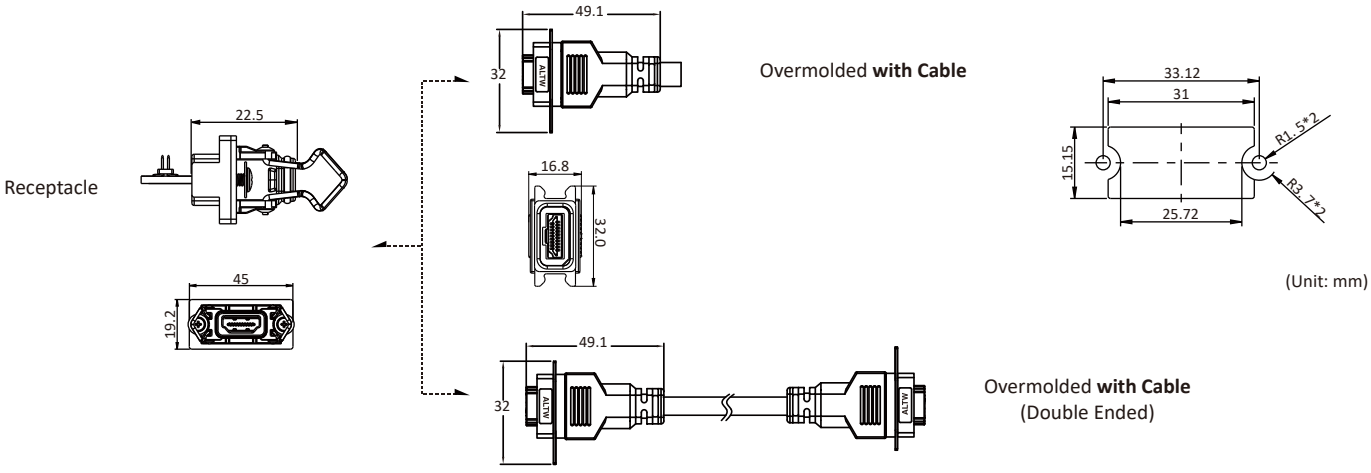


- IP Rating: IP67
- Mating Pair: Receptacle
- Mating Style: Screw Thread
- Mating Pair (Gender): Male
- Part Number: CAP-WADMSMA1

- IP Rating: IP67
- Mating Pair: Receptacle
- Mating Style: Screw Thread
- Mating Pair (Gender): Male
- Part Number: CAP-WADMSPC1 (With Rubber Lead)

## >> Rectangle Type

### Panel Cut Out

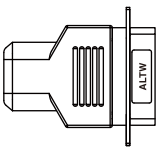



| | | |
|---|---|---|
| Receptacle IP67 (Unmated)<br>HJ-19PFFR-QS7001<br>(Female Conn. Female Contact) | Mate With → | Overmolded **With Cable** (**Straight**) IP67 (Mated)<br>HP-19AMMM-QL7A⑩ (Male Conn. Male Contact)<br><br>Overmolded **With Cable Double Ended** (**Straight**) IP67 (Mated)<br>HP19ML-HPML-QA⑩* (Male Conn. Male Contact) |

⑩ Cable Length (Single end) **(01)** 1M ~ **(05)** 5M
⑩ Cable Length (Double ended) **(A05)** 0.5M, **(001)** 1M ~ **(005)** 5M

*** Upon Request**

### Waterproof Cap




- IP Rating: IP67
- Mating Pair: Receptacle
- Mating Style: Latch Type
- Mating Pair (Gender): Female
- Part Number: CAP-WHDFHPA1

# Cable List

| Item No. | Jacket | Color | UL No. | Cable Specification | Cable OD | Copper Index (kg/km) | Weight (kg/km) |
|---|---|---|---|---|---|---|---|
| WCA00011181 | PVC | Black | SJTW | 12AWG*2C+Filler | 10.70 | 60.80 | 163.10 |
| WCA00011226 | PVC | Black | SJTW | 12AWG*3C | 11.20 | 89.60 | 222.90 |
| WCA00011182 | PVC | Black | SJTW | 12AWG*3C+Filler | 11.70 | 89.85 | 207.67 |
| WCA00011243 | PVC | Black | UL2464 | 12AWG*3C+Filler | 10.00 | 90.00 | 164.40 |
| WCA00011242 | PVC | Black | UL2464 | 12AWG*4C+Filler | 11.00 | 120.40 | 228.70 |
| WCA00012002 | PVC | Black | SJTW | 12AWG*4C+Filler | 12.30 | 122.00 | 293.00 |
| WCA00011183 | PVC | Black | SJTW | 12AWG*5C+Filler | 13.60 | 149.50 | 328.90 |
| WCA00010846 | PVC | Black | UL1277,UL1581&UL83 | 14AWG*3C | 9.70 | 53.80 | 134.20 |
| WCA0485XX01 | PVC | Black | UL2464 | 14AWG*3C+Talcum | 7.00 | 55.80 | 100.10 |
| WCA00011884 | PU | Black | UL20234 | 14AWG*5C+Filler+Paper | 10.00 | 115.70 | 180.00 |
| WCA00012012 | PU | Black | UL20234 | 14AWG*5C+Filler+Paper | 10.00 | 115.70 | 180.00 |
| WCA00011201 | PVC | Black | UL21388 | 16AWG*2C+AL/Mylar | 8.20 | 23.80 | 60.20 |
| WCA00011206 | PVC | Black | SJTW | 16AWG*2C+Filler | 8.20 | 24.25 | 85.10 |
| WCA0264UV01 | PVC | Black | UL2464 | 16AWG*2C+Talcum | 5.80 | 23.80 | 57.70 |
| WCA00010942 | PVC | Black | UL2464 | 16AWG*2C+Talcum | 7.80 | 24.20 | 95.00 |
| WCA00010625 | PVC | Black | UL2464 | 16AWG*3C+AL.Mylar+Drain | 7.50 | 46.80 | 96.60 |
| WCA00011202 | PVC | Black | UL21388 | 16AWG*3C+AL/Mylar | 8.60 | 35.70 | 71.50 |
| WCA0579UV01 | PVC | Black | UL2464 | 16AWG*3C+Drain+AL.Mylar | 7.50 | 46.70 | 97.90 |
| WCA00011207 | PVC | Black | SJTW | 16AWG*3C+Filler | 8.60 | 36.02 | 105.21 |
| WCA0285UV01 | PVC | Black | UL2464 | 16AWG*4C+AL.Mylar | 7.50 | 47.60 | 99.90 |
| WCA00011203 | PVC | Black | UL21388 | 16AWG*4C+AL/Mylar | 9.30 | 47.60 | 88.40 |
| WCA00011208 | PVC | Black | SJTW | 16AWG*4C+Filler | 9.30 | 49.00 | 131.50 |
| WCA00011204 | PVC | Black | UL21388 | 16AWG*5C+AL/Mylar | 10.70 | 59.40 | 99.80 |
| WCA0263UV01 | PVC | Black | UL2464 | 16AWG*5C+Talcum | 7.80 | 59.50 | 108.80 |
| WCA00011205 | PVC | Black | UL21388 | 16AWG*6C+AL/PET | 11.70 | 71.30 | 123.30 |
| WCA0582UV01 | PVC | Black | UL2464 | 16AWG*6C+Filler+Drain+AL.Mylar | 9.50 | 82.10 | 153.60 |
| WCA0583UV01 | PVC | Black | UL2464 | 16AWG*7C+Drain+AL.Mylar | 9.50 | 93.60 | 175.70 |
| WCA00011299 | PVC | Black | UL2464 | 18AWG*10C | 9.00 | 77.00 | 145.00 |
| WCE00010070-43 | PVC | Black | UL21996 | 18AWG*2C+Talcum | 3.4*5.3 | 14.82 | 36.97 |
| WCE00010074-43 | PVC | White | UL21996 | 18AWG*2C+Talcum | 3.4*5.3 | 14.82 | 36.97 |
| WCA00010897 | PVC | Black | UL1277, UL15, 81&UL83 | 18AWG*3C | 8.50 | 21.30 | 81.93 |
| WCA00011209 | PVC | Black | SJTW | 18AWG*3C+Filler | 8.00 | 21.30 | 81.93 |
| WCA00010898 | PVC | Black | UL1277, UL15, 81&UL83 | 18AWG*4C | 9.20 | 35.00 | 125.00 |
| WCE00010071-43 | PVC | Black | UL21996 | 18AWG*4C+Talcum | 3.4*9.2 | 29.64 | 68.14 |
| WCE00010075-43 | PVC | White | UL21996 | 18AWG*4C+Talcum | 3.4*9.2 | 29.64 | 68.14 |
| WCA00011240 | PVC | Black | UL2464 | 20AWG*10C+AL.Mylar+Filler | 9.00 | 48.00 | 116.40 |
| WCA00011192 | PVC | Black | UL21388 | 20AWG*10C+AL/Mylar | 8.50 | 48.00 | 109.70 |
| WCA00011436 | PVC | Black | UL2464 | 20AWG*12C+AL.Mylar+Filler | 9.00 | 57.60 | 125.10 |
| WCA00011193 | PVC | Black | UL21388 | 20AWG*12C+AL/Mylar | 8.50 | 57.60 | 121.70 |
| WCA00011200 | PVC | Black | UL21388 | 20AWG*14C+AL/Mylar | 8.50 | 67.20 | 130.60 |
| WCA0470XX01 | PVC | Black | UL2464 | 20AWG*14C+Braid | 9.50 | 87.90 | 161.30 |
| WCA0153XX01 | PVC | Black | UL2464 | 20AWG*18C+AL.Mylar | 9.50 | 86.40 | 154.20 |
| WCA00011581-43 | PVC | Black | UL 21996 | 20AWG*2C | 5.20 | 9.40 | 34.02 |
| WCA00011194 | PVC | Black | UL21388 | 20AWG*18C+AL/Mylar | 10.00 | 86.40 | 174.70 |
| WCA00010781 | PVC | Black | UL2464 | 20AWG*2C+AL.Mylar+Braid | 5.50 | 17.70 | 41.60 |
| WCA00011184 | PVC | Black | UL21388 | 20AWG*2C+AL/Mylar | 5.50 | 9.60 | 27.40 |
| WCA0124UV01 | PVC | Black | UL2464 | 20AWG*2C+Drain+AL.Mylar | 5.80 | 14.40 | 48.40 |
| WCE00010072-43 | PVC | Black | UL21996 | 20AWG*2C+Talcum | 3.2*5.0 | 14.10 | 41.45 |
| WCE00010076-43 | PVC | White | UL21996 | 20AWG*2C+Talcum | 3.2*5.0 | 14.10 | 41.45 |
| WCA00011580-43 | PVC | Black | UL 21996 | 20AWG*3C | 5.50 | 14.10 | 41.45 |
| WCA0489UV01 | PVC | Black | UL2464 | 20AWG*3C+AL.Mylar | 5.00 | 14.40 | 39.30 |
| WCA00010602 | PVC | Black | UL2464 | 20AWG*3C+AL.Mylar+Braid+Drain | 5.50 | 29.20 | 61.90 |
| WCA00011185 | PVC | Black | UL21388 | 20AWG*3C+AL/Mylar | 5.50 | 14.40 | 43.70 |
| WCA00011548-43 | PVC | Black | UL 21996 | 20AWG*4C | 6.00 | 18.80 | 48.46 |
| WCA00011186 | PVC | Black | UL21388 | 20AWG*4C+AL/Mylar | 6.00 | 19.20 | 51.40 |
| WCA0575UV01 | PVC | Black | UL2464 | 20AWG*4C+Drain+AL.Mylar | 5.50 | 24.00 | 52.10 |
| WCE00010073-43 | PVC | Black | UL21996 | 20AWG*4C+Talcum | 3.2*8.5 | 18.80 | 53.34 |
| WCE00010077-43 | PVC | White | UL21996 | 20AWG*4C+Talcum | 3.2*8.5 | 18.80 | 53.34 |
| WCA00011187 | PVC | Black | UL21388 | 20AWG*5C+AL/Mylar | 6.20 | 24.00 | 59.20 |
| WCA0576UV01 | PVC | Black | UL2464 | 20AWG*5C+Drain+AL.Mylar | 6.00 | 28.80 | 62.70 |
| WCA00011188 | PVC | Black | UL21388 | 20AWG*6C+AL/Mylar | 6.80 | 28.80 | 71.80 |
| WCA0577UV01 | PVC | Black | UL2464 | 20AWG*6C+Drain+AL.Mylar | 6.50 | 33.60 | 76.80 |
| WCA00011189 | PVC | Black | UL21388 | 20AWG*7C+AL/Mylar | 6.80 | 33.60 | 75.80 |
| WCA00010049 | PVC | Black | UL2464 | 20AWG*7C+Drain+AL.Mylar | 6.50 | 38.40 | 74.80 |
| WCA00010550 | PVC | Black | UL2464 | 20AWG*8C+AL.Mylar+Drain+Filler | 6.80 | 43.00 | 86.00 |

# Cable List

| Item No. | Jacket | Color | UL No. | Cable Specification | Cable OD | Copper Index (kg/km) | Weight (kg/km) |
|---|---|---|---|---|---|---|---|
| WCA00011190 | PVC | Black | UL21388 | 20AWG*8C+AL/Mylar | 7.20 | 38.40 | 87.00 |
| WCA00011489-28 | PVC | Black | UL2464 | 20AWG*9C+AL.Mylar+Drain | 7.40 | 48.50 | 101.80 |
| WCA00011191 | PVC | Black | UL21388 | 20AWG*9C+AL/Mylar | 7.60 | 43.20 | 97.30 |
| WCA00010868 | PVC | Black | UL2464 | 22AWG*2C+Talcum | 4.20 | 6.20 | 24.60 |
| WCA00011339 | PVC | Yellow | UL2517 | 22AWG*3C | 4.50 | 9.00 | 31.50 |
| WCA00011343 | PU | Black | UL20549 | 22AWG*3C | 3.80 | 9.00 | 26.00 |
| WCA00011459-28 | PVC | Black | UL2517 | 22AWG*3C | 4.50 | 9.30 | 31.00 |
| WCA00010063 | PU | Black | NONUL | 22AWG*3C+Talcum | 4.50 | 9.00 | 26.40 |
| WCA0570UV01 | PVC | Black | UL2464 | 22AWG*3C+Talcum | 5.00 | 9.30 | 35.20 |
| WCA00011340 | PVC | Yellow | UL2517 | 22AWG*4C | 4.80 | 11.70 | 40.00 |
| WCA00011344 | PU | Black | UL20549 | 22AWG*4C | 4.00 | 12.00 | 31.80 |
| WCA00011460-28 | PVC | Black | UL2517 | 22AWG*4C | 4.80 | 12.00 | 38.00 |
| WCA00011813-01 | PVC | Black | UL2517 | 22AWG*4C+AL.Mylar+Braid | 5.30 | 22.00 | 46.00 |
| WCA00011872 | PU | Black | UL20549 | 22AWG*4C+AL.Mylar+Braid+Paper | 5.30 | 22.00 | 48.00 |
| WCA00010062 | PU | Black | NONUL | 22AWG*4C+Insulation | 4.80 | 12.00 | 29.40 |
| WCA0571UV01 | PVC | Black | UL2464 | 22AWG*4C+Talcum | 5.00 | 12.40 | 38.60 |
| WCA00011341 | PVC | Yellow | UL2517 | 22AWG*5C | 5.10 | 15.50 | 43.80 |
| WCA00011687-01 | PVC | Black | UL2517 | 22AWG*5C+AL.Mylar+Filler+Braid | 5.70 | 26.00 | 58.00 |
| WCA00011345 | PU | Black | UL20549 | 22AWG*5C+Filler | 4.40 | 15.00 | 43.50 |
| WCA00011461-28 | PVC | Black | UL2517 | 22AWG*5C+Filler | 5.10 | 15.00 | 43.00 |
| WCA00011870 | PU | Black | UL20549 | 22AWG*5C+Filler+AL.Mylar+Braid+Paper | 5.70 | 26.00 | 51.00 |
| WCA00012245 | PU | Black | UL20549 | 22AWG*5C+Filler+Paper | 5.60 | 19.00 | 51.00 |
| WCA00010061 | PU | Black | NONUL | 22AWG*5C+Filler+Talcum+Paper | 5.00 | 15.50 | 38.50 |
| WCA0352XX02 | PU | Black | NONUL | 22AWG*5C+Talcum | 5.00 | 15.50 | 47.50 |
| WCA0521UV01 | PVC | Black | UL2464 | 22AWG*5C+Talcum | 5.50 | 15.50 | 47.50 |
| WCA0556UV01 | PVC | Black | UL2464 | 24AWG*10C+Drain+AL.Mylar | 6.50 | 22.00 | 63.80 |
| WCA0557UV01 | PVC | Black | UL2464 | 24AWG*12C+Drain+AL.Mylar | 7.00 | 26.00 | 72.30 |
| WCA0558UV01 | PVC | Black | UL2464 | 24AWG*14C+Drain+AL.Mylar | 7.00 | 30.00 | 77.10 |
| WCA0465UV01 | PVC | Black | UL2464 | 24AWG*15C+Drain+AL.Mylar | 7.00 | 32.00 | 77.60 |
| WCA0560UV01 | PVC | Black | UL2464 | 24AWG*18C+Drain+AL.Mylar | 8.00 | 38.00 | 100.70 |
| WCA0284UV01 | PVC | Black | UL2464 | 24AWG*25C+Drain+AL.Mylar | 9.00 | 51.90 | 130.90 |
| WCA0072UV01 | PVC | Black | UL2464 | 24AWG*2C+Drain+AL.Mylar | 4.20 | 6.00 | 24.00 |
| WCA0027UV01 | PVC | Black | UL2464 | 24AWG*2C+Talcum | 4.20 | 4.00 | 22.70 |
| WCA00010114 | PVC | Black | UL2464 | 24AWG*37C+Drain+AL/Mylar | 9.50 | 74.00 | 153.20 |
| WCA00011746-03 | PVC | Black | UL2517 | 24AWG*3C+AL.Mylar+Braid | 4.60 | 13.10 | 31.30 |
| WCA0549UV01 | PVC | Black | UL2464 | 24AWG*3C+Drain+AL.Mylar | 4.50 | 8.00 | 29.00 |
| WCA0006UV01 | PVC | Black | UL2464 | 24AWG*3C+Talcum | 4.50 | 6.00 | 27.70 |
| WCA00011726-03 | PVC | Black | UL2517 | 24AWG*4C+AL.Mylar+Braid | 5.00 | 16.40 | 38.50 |
| WCA0219UV01 | PVC | Black | UL2464 | 24AWG*4C+Drain+AL.Mylar | 5.80 | 10.00 | 45.60 |
| WCA0036UV01 | PVC | Black | UL2464 | 24AWG*4C+Talcum | 5.00 | 8.00 | 32.40 |
| WCA00011584-43 | PVC | Black | UL 21996 | 24AWG*5C | 5.50 | 9.88 | 41.20 |
| WCA0551UV01 | PVC | Black | UL2464 | 24AWG*5C+Drain+AL.Mylar | 5.00 | 12.00 | 37.00 |
| WCA0229UV01 | PVC | Black | UL2464 | 24AWG*5C+Talcum | 5.00 | 10.00 | 34.40 |
| WCA00011583-43 | PVC | Black | UL 21996 | 24AWG*6C | 5.80 | 11.86 | 45.21 |
| WCA00011214 | PVC | Black | UL2464 | 24AWG*6C+AL.Mylar | 5.00 | 12.00 | 39.40 |
| WCA0217UV01 | PVC | Black | UL2464 | 24AWG*6C+Drain+AL.Mylar | 5.80 | 14.00 | 45.00 |
| WCA00011479-28 | PVC | Black | UL2517 | 24AWG*6C+Filler | 5.00 | 12.00 | 40.00 |
| WCA00012067 | PVC | Black | UL21388 | 24AWG*6C+Filler+AL.Mylar | 5.20 | 11.40 | 35.40 |
| WCA00011421 | PVC | Yellow | UL2517 | 24AWG*6C+Filler+Talcum | 5.00 | 17.60 | 49.20 |
| WCA00011422 | PU | Black | UL20549 | 24AWG*6C+Filler+Talcum | 5.00 | 13.00 | 34.00 |
| WCA0087UV01 | PVC | Black | UL2464 | 24AWG*7C+Drain+AL/Mylar | 5.80 | 16.00 | 51.00 |
| WCA00011342 | PVC | Yellow | UL2517 | 24AWG*8C | 5.50 | 15.50 | 48.00 |
| WCA00011346 | PU | Black | UL20549 | 24AWG*8C | 4.80 | 15.50 | 35.00 |
| WCA00011462-28 | PVC | Black | UL2517 | 24AWG*8C | 5.50 | 15.50 | 48.00 |
| WCA00011698-01 | PVC | Black | UL2517 | 24AWG*8C+AL.Mylar+Filler+Braid | 5.80 | 27.00 | 60.00 |
| WCA0003UV01 | PVC | Black | UL2464 | 24AWG*8C+Drain+AL/Mylar | 5.50 | 18.00 | 45.70 |
| WCA00012066 | PVC | Black | UL21388 | 24AWG*8C+Filler+AL.Mylar | 5.60 | 15.20 | 43.40 |
| WCA00011814-01 | PU | Black | UL20549 | 24AWG*8C+Filler+AL.Mylar+Braid+Paper | 5.80 | 26.00 | 51.00 |
| WCA00012341 | PU | Black | UL20549 | 24AWG*8C+Filler+Paper | 6.70 | 19.00 | 65.00 |
| WCA0203UV01 | PVC | Black | UL2464 | 24AWG*8C+Talcum | 5.50 | 16.00 | 45.30 |
| WCA0528UV01 | PVC | Black | UL2464 | 24AWG*9C+Drain+AL.Mylar | 6.00 | 20.00 | 54.80 |
| WCA0540UV01 | PVC | Black | UL2464 | 26AWG*6C+Drain+AL.Mylar | 5.00 | 9.80 | 33.70 |
| WCA0543UV01 | PVC | Black | UL2464 | 26AWG*10C+Drain+AL.Mylar | 6.00 | 15.00 | 50.30 |
| WCA00011400 | PU | Black | UL20549 | 26AWG*10C+Filler | 6.00 | 14.00 | 48.00 |
| WCA00011401 | PVC | Yellow | UL2517 | 26AWG*10C+Filler | 6.00 | 14.00 | 52.00 |

# Cable List

| Item No. | Jacket | Color | UL No. | Cable Specification | Cable OD | Copper Index (kg/km) | Weight (kg/km) |
|---|---|---|---|---|---|---|---|
| WCA00011463-01 | PVC | Black | UL2517 | 26AWG*10C+Filler | 6.00 | 14.00 | 52.00 |
| WCA00011380 | PU | Black | UL20549 | 26AWG*12C | 6.00 | 16.00 | 47.00 |
| WCA00011402 | PVC | Yellow | UL2517 | 26AWG*12C | 6.00 | 17.00 | 54.00 |
| WCA00011464-01 | PVC | Black | UL2517 | 26AWG*12C | 6.00 | 17.00 | 55.00 |
| WCA00011782-01 | PVC | Black | UL2517 | 26AWG*12C+AL.Mylar+Braid | 6.40 | 25.00 | 63.00 |
| WCA00011871 | PU | Black | UL20549 | 26AWG*12C+AL.Mylar+Braid+Paper | 6.40 | 28.00 | 60.00 |
| WCA0544UV01 | PVC | Black | UL2464 | 26AWG*12C+Drain+AL.Mylar | 6.00 | 17.60 | 53.10 |
| WCA0545UV01 | PVC | Black | UL2464 | 26AWG*15C+Drain+AL.Mylar | 6.50 | 21.50 | 58.70 |
| WCA00012148 | PU | Black | UL20549 | 26AWG*17C+Filler | 7.00 | 23.00 | 63.00 |
| WCA00012173 | PVC | Yellow | UL2517 | 26AWG*17C+Filler | 7.00 | 24.00 | 73.00 |
| WCA00012149 | PVC | Black | UL2517 | 26AWG*17C+Filler | 7.00 | 24.00 | 68.00 |
| WCA00012151 | PVC | Black | UL2517 | 26AWG*17C+Filler+AL.Mylar+Braid | 7.50 | 40.00 | 91.00 |
| WCA00012150 | PU | Black | UL20549 | 26AWG*17C+Filler+AL.Mylar+Braid+Paper | 7.50 | 39.00 | 80.00 |
| WCA00010045 | PVC | Black | UL2464 | 26AWG*22C+Drain+AL.Mylar | 7.50 | 29.90 | 78.10 |
| WCA0546UV01 | PVC | Black | UL2464 | 26AWG*26C+Drain+AL.Mylar | 8.00 | 35.80 | 91.30 |
| WCA0449UV01 | PVC | Black | UL2464 | 26AWG*31C+Drain+AL.Mylar | 9.00 | 42.30 | 117.40 |
| WCA0481UV01 | PVC | Black | UL2464 | 26AWG*3C+Drain+AL.Mylar | 4.00 | 5.20 | 22.40 |
| WCA0547UV01 | PVC | Black | UL2464 | 26AWG*44C+Drain+AL.Mylar | 10.50 | 59.20 | 157.10 |
| WCA0487UV01 | PVC | Black | UL2464 | 26AWG*4C+Drain+AL.Mylar | 4.80 | 7.20 | 30.80 |
| WCA0486UV01 | PVC | Black | UL2464 | 26AWG*5C+Drain+AL.Mylar | 4.80 | 8.50 | 33.00 |
| WCA00011480-01 | PU | Black | - | CAT.5E 22AWG*2P+Drain+Filler+AL.Mylar | 6.20 | 14.00 | 44.00 |
| WCA00011527-17 | LSZH | Green | - | CAT.6A S/FTP 26AWG*4P+AL/Polyester+Braid | 6.60 | 17.99 | 47.08 |
| WCA00010840 | PVC | Black | - | CAT5E FTP 24AWG*4P+Mylar+D+AL.Mylar | 6.50 | 17.97 | 47.34 |
| WCA0373XX01 | PVC | Beige | - | CAT5E FTP 24AWG*4P+Mylar+D+AL.Mylar | 6.00 | 18.00 | 41.80 |
| WCA0664UV01 | PVC | Black | - | CAT5E FTP 24AWG*4P+Mylar+D+AL/Mylar | 6.50 | 18.00 | 52.30 |
| WCA0459XX01 | PVC | Beige | - | CAT5E S-FTP 24AWG*4P+Mylar+AL.Mylar+D+B | 6.10 | 30.97 | 55.00 |
| WCA0663UV01 | PVC | Black | - | CAT5E UTP 24AWG*4P | 6.00 | 16.00 | 49.40 |
| WCA00011688-03 | PVC | Yellow | - | CL2 22AWG*2C+AL.Mylar+Drain+Braid | 5.80 | 16.70 | 49.80 |
| WCA0611XX01 | PVC | Black | - | SJTW 14AWG*3C | 9.50 | 56.70 | 154.50 |
| WCA00010369 | PVC | Black | - | STOOW 16AWG*4C | 10.60 | 49.00 | 181.00 |
| WCA00010899 | PVC | Black | UL1277,UL1581,UL83 | 14AWG*3C+16AWG*1C | 10.30 | 68.48 | 172.00 |
| WCA00011252 | PU | Black | UL20549 | 18AWG*2C+22AWG*4C+Filler+Paper | 6.00 | 27.50 | 63.00 |
| WCA00011253 | PU | Black | UL20549 | 18AWG*2C+22AWG*6C+Filler+Paper | 7.40 | 33.60 | 83.00 |
| WCA00011254 | PU | Black | UL20549 | 18AWG*2C+22AWG*8C+Filler+Paper | 8.20 | 40.00 | 98.00 |
| WCA00011582-43 | PVC | Black | UL 21996 | 20AWG*2C+20AWG*3C | 6.00 | 15.33 | 50.21 |
| WCA0585UV01 | PVC | Black | UL2464 | 24AWG*4C+20AWG*2C+Drain+AL.Mylar | 6.00 | 22.40 | 57.40 |
| WCA0042UV01 | PVC | Black | UL2464 | 24AWG*6C+20AWG*2C+Drain+AL.Mylar | 6.00 | 26.20 | 58.50 |
| WCA0584UV01 | PVC | Black | UL2464 | 26AWG*6C+24AWG*2C+Drain+AL.Mylar | 5.50 | 13.70 | 42.80 |
| WCA0365UV01 | PVC | Black | - | 28AWG*1P+24AWG*2C+AL.Mylar+Drain+Braid (USB2.0) | 5.00 | 11.90 | 35.10 |
| WCA00012165 | PVC | Black | UL2725 | 28AWG*1P+28AWG*2C+AL.Mylar+Drain+Braid | 3.80 | 10.00 | 21.00 |
| WCA0691XX01 | PVC | Black | UL2725 | 28AWG*1P+28AWG*3C+AL.Mylar+Drain+Braid | 3.80 | 10.40 | 23.20 |
| WCA00010259 | PVC | Black | UL20276 | [(18AWG*1P+AL)+(16AWG*1P+AL)]+Drain+AL+Braid | 10.00 | 73.00 | 152.00 |
| WCA00011922 | PVC | Black | UL21996 | (20AWG*1P+Drain+AL.Mylar)+16AWG*3C+Filler+AL.Mylar | 8.50 | 50.61 | 115.27 |
| WCA00010258 | PVC | Black | - | [(22AWG+1P+AL)+(18AWG+1P+AL)]+Drain+AL.Mylar+Braid | 7.00 | 42.00 | 80.00 |
| WCA00010876 | PVC | Black | UL2586 | (24AWG*1P+A)*2C+16AWG*3C+EA | 10.00 | 47.00 | 128.00 |
| WCA00010257 | PVC | Black | - | [(24AWG+1P+AL)+(22AWG+1P+AL)]+Drain+AL.Mylar+Braid | 6.00 | 27.00 | 58.00 |
| WCA00011350 | PVC | Black | - | [(24AWG+1P+AL)+(22AWG+1P+AL)]+Drain+AL.Mylar+Braid | 6.70 | 29.70 | 65.80 |
| WCA00010437 | PVC | Gray | - | [(24AWG+1P+AL)+(22AWG+1P+AL)]+Drain+Braid+Mylar | 7.10 | 14.80 | 69.80 |
| WCA00010080 | PVC | Black | UL2464 | (24AWG*25C+Mylar)+24AWG*25C+Drain+Al.Mylar | 12.00 | 110.00 | 285.00 |
| WCA00010710 | PVC | Black | UL2464 | (24AWG*2P+Drain+AL)+16AWG*3C+Filler+Paper | 12.00 | 45.70 | 179.10 |
| WCA00011923 | PVC | Black | UL21996 | (24AWG*2P+Drain+AL.Mylar)+12AWG*3C+Filler+AL.Mylar | 11.50 | 99.97 | 187.20 |
| WCA00010635 | PVC | Black | UL2464 | (24AWG*4P+Drain+AL)+16AWG*3C+Filler+Paper | 11.00 | 41.70 | 149.70 |
| WCA00010264 | PVC | Black | UL20276 | (26AWG*1P+Drain+AL.Mylar)*4C+26AWG*1P+26AWG*5C+AL.Mylar+Braid | 8.50 | 45.50 | 94.30 |
| WCA00011530-43 | PVC | Black | UL21996 | (26AWG*2P+AL.Mylar)+16AWG*2C+Filler+AL.Mylar | 9.30 | 28.54 | 106.26 |
| WCA00011531-43 | PVC | Black | UL21996 | (26AWG*2P+Drain+AL.Mylar)+16AWG*3C+Filler+AL.Mylar | 11.00 | 41.58 | 146.60 |
| WCA00011532-43 | PVC | Black | UL21996 | (26AWG*4P+Drain+AL.Mylar)+12AWG*3C+Filler+AL.Mylar | 13.50 | 101.34 | 269.21 |
| WCA00012137 | PVC | Black | UL2725 | (28AWG*1P+DAM)*2+28AWG*1P+28AWG*2C+Filler+AL.Mylar+Drain+Braid | 6.00 | 21.80 | 48.20 |
| WCA00010095 | PVC | Black | UL20276 | (28AWG*1P+Drain+AL+Mylar)*4C+(1P+3C)*28AWG+AL+Braid | 7.30 | 33.90 | 73.70 |
| WCA00010097 | PVC | Black | UL20276 | (28AWG*1P+Drain+AL+Mylar)*7C+28AWG*1P+28AWG*3C+AL+Braid | 8.50 | 41.40 | 90.90 |
| WCA00010081 | PVC | Black | UL2464 | [(28AWG*28C+Mylar)+28AWG*22C+Mylar]+28AWG*28C+Drain+AL | 13.00 | 63.70 | 238.40 |
| WCA00010096 | PVC | Black | UL20276 | [3COAX+(28AWG*1P+Drain+AL.Mylar+Mylar)*4+28AWG*1P+28AWG*6C]+AL.Mylar+Braid | 8.50 | 53.50 | 93.10 |
| WCA00010098 | PVC | Black | UL20276 | [3COAX+(28AWG*1P+Drain+AL+Mylar)*7+28AWG*1P+28AWG*6C]+AL+Braid | 10.00 | 71.00 | 145.50 |
| WCA00011960 | PU | Black | UL20233 | 5C*2.5mm²+Filler+Paper | 10.20 | 116.00 | 191.00 |
| WCA00011175 | PU | Black | UL20549 | 8C*0.34mm²+3C*1.0mm²+Filler | 8.60 | 54.00 | 116.00 |
| WCA00011176 | PU | Black | UL20549 | 16C*0.34mm²+3C*1.0mm²+Filler | 9.70 | 79.00 | 161.00 |

# Power-limited Circuit Cable

## Specifications

- Rated Voltage: 300V
- Temperature Range: FEP: 70˚C
  PVC: 60˚C, 75˚C
- Test Voltage: 900V AC at 2 seconds
- Conductor Range: 28AWG ~ 10AWG
- Conductor Material Available: Standard Bare Copper
- Insulator Material Available: FEP/PVC
- Jacket Material: FEP/PVC
- O.D. Tolerance: > Ø17.8 mm

**(UL) E489959-N CLXX XX AWG XX°C 300V**

CLXX: UL13 Cable Type
- Plenum Rated: (2P), (3P)
- Riser Rated: (2R), (3R)
- General Rated: (2), (3)
- Residential Rated: (2X), (3X)

XX°C: Temperature Rating
- FEP: (70)
- PVC: (60), (75)

## Features & Applications:

| Type | Fire Resistance Level | UL Standard | CSA | Application |
|---|---|---|---|---|
| CL3P<br>CL2P | Plenum Rated<br>(Highest) | UL 910,<br>CMP | FT6 | • Ducts or plenums air handling space |
| CL3R<br>CL2R | Riser Rated | UL 1666,<br>CMR | - | • Vertical shafts in non-plenum areas<br>• Cable runs through more than one floor |
| CL3<br>CL2 | General Purpose Rated | UL 1685,<br>CMG/CM | FT4 | • Power-limited circuit cable in non-plenum areas<br>• Cable runs within one floor |
| CL3X<br>CL2X | Residential Rated<br>(Lowest) | VW-1,<br>CMX | - | • Enclosed in non-plenum raceway or noncombustible tubing<br>• Cable runs within one floor |

Notes: UL File Number E489959; round or flat cable available

## Find Our Standard Products

| Part Number | | WCA00011262 | WCA00011263 | WCA00011435 | WCA00011282 | WCA00011283* | WCA00011272 | WCA00011324 |
|---|---|---|---|---|---|---|---|---|
| Cable Type | | CL3P | CL3P | CL3P | CL3P | CL3P | CL3P | CL3P |
| Conductor | AWG | 10 | 16 | 16 | 16 | 16 | 18 | 22 |
| | No. | 2 | 2 | 2 | 8 | 16 | 2 | 2 |
| | Dia. | 2.6 | 1.3 | 1.3 | 1.3 | 1.3 | 1.02 | 0.64 |
| Insulation | Nom. Thick. | 0.25mm | 0.27mm | 0.27mm | 0.27mm | 0.27mm | 0.27mm | 0.25mm |
| | Nom. Dia. | 3.5±0.1mm | 2.00±0.1mm | 2.00±0.1mm | 2.00±0.1mm | 2.00±0.1mm | 1.62±0.10mm | 1.12±0.05mm |
| Jacket | Nom. Thick. | 0.8mm | 0.58mm | 0.58mm | 0.69mm | 0.56mm | 0.42mm | 0.46mm |
| | Nom. Dia. | 8.8±0.3mm | 5.2±0.3mm | 5.2±0.3mm | 8.0±0.3mm | 11.0±0.5mm | 4.4±0.15mm | 3.4±0.15mm |
| Conductor Resistance at 20˚C (Max.) | | 3.41Ω/km | 13.7Ω/km | 13.7Ω/km | 13.7Ω/km | 13.7Ω/km | 21.9Ω/km | 55.4Ω/km |

* Upon Request

Other cable types and customization are available upon request.

# UL 21996 Multiple-Conductor Cable Using Non-Integral Jacket

## Specifications

- Rated Voltage: 300V
- Temperature Range: -40˚C ~ 105˚C
- Test Voltage: 2000V AC at 1 minute
- Wet Temperature Rating: 60˚C (Max.)
- Conductor Range: 30AWG ~ 10AWG
- Conductor Material Available: Tinned Copper
- Insulator Material Available: FEP/PVC
- Shielding Material Available: AL/Mylar: Coverage 100%, Overlap 25% (Min.)
  Braid: Tinned Copper, Overlap 65% (Min.)
  Spiral: Tinned Copper, Overlap 90% (Min.)
- Jacket Material: PVC
- O.D. Tolerance: > Ø17.8 mm
- Impedance: 100Ω ~ 120Ω ±15Ω

**E489039-D AWM 21996 XX AWG -40℃ 105℃ 300V VW-1. AWM I/II A/B -40℃ 105℃ 300V FT1 Sun Res Wet 60℃ Cable**

## Application

Internal wiring and external interconnection of electronic equipment. Suitable for outdoor use.

## Features

- Reference standard: UL Subject 758, UL 1581 & CSA C22.2 No.210.2
- Lead free PVC jacket
- Wide temperature range
- Sunlight resistant
- Passes UL VW-1(horizontal) & CSA FT1 (vertical) flammability tests
- Round or flat cable available
- Mixture, individual or paired conductors available
- UL File Number: E489039

## Find Our Standard Products

**Single Insulated Conductor Cable**

| Part Number | | WCA00011581-43 | WCA00011580-43 | WCA00011548-43 | WCA00011584-43 | WCA00011583-43 |
|---|---|---|---|---|---|---|
| Conductor | AWG | 20 | 20 | 20 | 24 | 24 |
| | No. | 2 | 3 | 4 | 5 | 6 |
| | Dia. | 0.942mm | 0.942mm | 0.942mm | 0.609mm | 0.609mm |
| Insulation | Nom. Thick. | 0.38mm | 0.38mm | 0.38mm | 0.35mm | 0.35mm |
| | Nom. Dia. | 1.70±0.10mm | 1.70±0.10mm | 1.70±0.10mm | 1.30±0.07mm | 1.30±0.07mm |
| Shield | Style | - | - | - | - | Paper |
| | Overlap | - | - | - | - | 25% |
| Conductor Resistance at 20˚C (Max.) | | 34.6 / km | 34.6 / km | 34.6 / km | 93.0 / km | 93.0 / km |
| Jacket | Nom. Thick. | 0.98mm | 0.92mm | 0.95mm | 0.92mm | 0.95mm |
| | Nom. Dia. | 5.2±0.15mm | 5.5±0.20mm | 6.0±0.20mm | 5.5±0.20mm | 5.8±0.20mm |

# UL 21996 Multiple-Conductor Cable Using Non-Integral Jacket

### Multi-conductor Cable

| Part Number | | WCA00011532-43 | | WCA00011530-43 | | WCA00011531-43 | | WCA00011582-43 | |
|---|---|---|---|---|---|---|---|---|---|
| Component | | A | B | A | B | A | B | A | B |
| Conductor | AWG | 12 | 26 | 16 | 26 | 16 | 26 | 20 | 24 |
| | No. | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 3 |
| | Dia. | 2.365mm | 0.480mm | 1.490mm | 0.480mm | 1.490mm | 0.480mm | 0.942mm | 0.609mm |
| Insulation | Nom. Thick. | 0.46mm | 0.46mm | 0.40mm | 0.46mm | 0.40mm | 0.46mm | 0.38mm | 0.35mm |
| | Nom. Dia. | 3.30±0.15mm | 1.40±0.10mm | 2.30±0.10mm | 1.40±0.10mm | 2.30±0.10mm | 1.40±0.10mm | 1.70±0.10mm | 1.30±0.07mm |
| Shield | Style | - | Al. Mylar | - | Al. Mylar | - | Al. Mylar | - | Paper |
| | Overlap | - | 25% | - | 25% | - | 25% | - | 25% |
| Drain | AWG | - | 26 | - | - | - | 26 | - | - |
| | Dia. | - | 0.480mm | - | - | - | 0.480mm | - | - |
| Conductor Resistance at 20˚C (Max.) | | 5.54 / km | 148.0 / km | 13.7 / km | 148.0 / km | 13.7 / km | 148.0 / km | 34.6 / km | 93.0 / km |
| Jacket | Nom. Thick. | 1.65mm | | 1.65mm | | 1.65mm | | 0.9mm | |
| | Nom. Dia. | 13.5±0.40mm | | 9.3±0.25mm | | 11.0±0.30mm | | 6.0±0.20mm | |
| Impedance | | 120±15 | | 120±15 | | 120±15 | | - | |

Customization is available upon request.

# UL 21388 Jacket Cable

## Specifications

- Rated Voltage: 300V
- Temperature Range: ~ 80˚C
- Test Voltage: 2000V AC at 1 minute
- Conductor Range: 30AWG ~ 10AWG
- Conductor Material Available: Tinned Copper
- Insulator Material Available: FEP/PVC/PE
- Shielding Material Available: AL/Mylar: Coverage 100%, Overlap 25% (Min.)
  Braid: Tinned Copper, Overlap 65% (Min.)
  Spiral: Tinned Copper, Overlap 90% (Min.)
- Jacket Material: PVC
- O.D. Tolerance: > Ø17.8 mm
- Impedance: 100Ω ~ 120Ω ±15Ω

**E489039-D AWM 21388 XX AWG 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1 Sun Res Cable**

## Application

Internal wiring and external interconnection of electronic equipment. Suitable for outdoor use.

## Features

- Reference standard: UL Subject 758, UL1581 & CSA C22.2 No.210.2
- Lead free PVC jacket
- Wide temperature range
- Sunlight resistant
- Passes UL VW-1(horizontal) & CSA FT1 (vertical) flammability tests
- Round or flat cable available
- Mixture, individual or paired conductors available
- UL File Number: E489039

## Find Our Standard Products

| Part Number | | WCA00011201 | WCA00011202 | WCA00011203 | WCA00011204 | WCA00011205 | WCA00011184 |
|---|---|---|---|---|---|---|---|
| Conductor | AWG | 16 | 16 | 16 | 16 | 16 | 20 |
| | No. | 2 | 3 | 4 | 5 | 6 | 2 |
| | Dia. | 1.496mm | 1.496mm | 1.496mm | 1.496mm | 1.496mm | 0.953mm |
| Insulation | Nom. Thick. | 0.23mm | 0.23mm | 0.23mm | 0.23mm | 0.23mm | 0.23mm |
| | Nom. Dia. | 2.10±0.10mm | 2.10±0.10mm | 2.10±0.10mm | 2.10±0.10mm | 2.10±0.10mm | 1.50±0.10mm |
| Shield | Style | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar |
| | Overlap | 25% | 25% | 25% | 25% | 25% | 25% |
| Jacket | Nom. Thick. | 0.76mm | 0.76mm | 0.76mm | 0.76mm | 0.76mm | 0.76mm |
| | Nom. Dia. | 6.00±0.20mm | 6.50±0.20mm | 6.80±0.20mm | 7.60±0.20mm | 8.40±0.20mm | 5.50±0.20mm |
| Conductor Resistance at 20˚C (Max.) | | 14.7 / km | 14.7 / km | 14.7 / km | 14.7 / km | 14.7 / km | 36.7 / km |

# UL 21388 Jacket Cable

## Find Our Standard Products

| Part Number | | WCA00011185 | WCA00011186 | WCA00011187 | WCA00011188 | WCA00011189 | WCA00011190 |
|---|---|---|---|---|---|---|---|
| Conductor | AWG | 20 | 20 | 20 | 20 | 20 | 20 |
| | No. | 3 | 4 | 5 | 6 | 7 | 8 |
| | Dia. | 0.953mm | 0.953mm | 0.953mm | 0.953mm | 0.953mm | 0.953mm |
| Insulation | Nom. Thick. | 0.23mm | 0.23mm | 0.23mm | 0.23mm | 0.23mm | 0.23mm |
| | Nom. Dia. | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm |
| Shield | Style | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar |
| | Overlap | 25% | 25% | 25% | 25% | 25% | 25% |
| Jacket | Nom. Thick. | 0.76mm | 0.76mm | 0.76mm | 0.76mm | 0.76mm | 0.76mm |
| | Nom. Dia. | 5.50±0.20mm | 6.00±0.20mm | 6.20±0.20mm | 6.80±0.20mm | 6.80±0.20mm | 7.20±0.20mm |
| Conductor Resistance at 20°C (Max.) | | 36.7 / km | 36.7 / km | 36.7 / km | 36.7 / km | 36.7 / km | 36.7 / km |

| Part Number | | WCA00011191 | WCA00011192 | WCA00011193 | WCA00011200 | WCA00011194 |
|---|---|---|---|---|---|---|
| Conductor | AWG | 20 | 20 | 20 | 20 | 20 |
| | No. | 9 | 10 | 12 | 14 | 18 |
| | Dia. | 0.953mm | 0.953mm | 0.953mm | 0.953mm | 0.953mm |
| Insulation | Nom. Thick. | 0.23mm | 0.23mm | 0.23mm | 0.23mm | 0.23mm |
| | Nom. Dia. | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm | 1.50±0.10mm |
| Shield | Style | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar | Al. Mylar |
| | Overlap | 25% | 25% | 25% | 25% | 25% |
| Jacket | Nom. Thick. | 0.76mm | 0.76mm | 0.76mm | 0.76mm | 0.76mm |
| | Nom. Dia. | 7.60±0.20mm | 8.50±0.25mm | 8.50±0.25mm | 8.50±0.20mm | 10.0±0.30mm |
| Conductor Resistance at 20°C (Max.) | | 36.7 / km | 36.7 / km | 36.7 / km | 36.7 / km | 36.7 / km |

Customization is available upon request.

# UL 2464 Multiple-Conductor Cable Using Non-Integral Jacket

## Specifications

- Rated Voltage: 300V
- Temperature Range: ~ 80˚C
- Test Voltage: 2000V AC at 1 minute
- Conductor Range: 30AWG ~ 10AWG
- Conductor Material Available: Tinned Copper
- Insulator Material Available: FEP/PVC/PE
- Shielding Material Available: AL/Mylar: Coverage 100%, Overlap 25% (Min.)
  Braid: Tinned Copper, Overlap 65% (Min.)
  Spiral: Tinned Copper, Overlap 90% (Min.)
- Jacket Material: PVC
- O.D. Tolerance: > Ø17.8 mm
- Impedance: 100Ω ~ 120Ω ±15Ω

**E489039-D AWM 2464 XX AWG 80°C 300V VW-1 c AWM I/II A/B 80°C 300V FT1 Cable**

## Application

Internal wiring and external interconnection of electronic equipment. Suitable for outdoor use.

## Features

- Reference standard: UL Subject 758, UL1581 & CSA C22.2 No.210.2
- Lead free PVC jacket
- Wide temperature range
- Sunlight resistant
- Passes UL VW-1(horizontal) & CSA FT1 (vertical) flammability tests
- Round or flat cable available
- Mixture, individual or paired conductors available
- UL File Number: E489039

# FAQ

## Question

Our most popular FAQs will help you to easily find the answers you need.


### Q: What connectors can be used for power and signal distribution?

A: Ceres, SENSOR, X-Lok, RBL and HS-Lok connectors. For more detailed information and guide, please refer to our "Product Summary Table".

### Q: Can ALTW connectors be used in direct burial?

A: No, they are not designed for this type of application. They should be routed inside a conduit or other means of reinforcement if deployed underground.

### Q: Can ALTW connectors be used in continuous water immersion?

A: No, there is a limitation for their immersion to water as defined on each IP rating.
Only "Deeptronica" series can be used in permanent immersion.

### Q: Why are ALTW connectors called waterproof if they can only be immersed for a certain period? Shouldn't they be called water resistant?

A: As long as the immersion period does not surpass the conditions specified on the IP rating, they can be refered to as waterproof.

### Q: What is the Ingress Protection (IP) of ALTW connectors?

A: It ranges from IP65 to IP69K.

### Q: Can ALTW connectors be connected/disconnected under load?

A: By default, only connectors for data (RJ45, DVI, HDMI, and USB) can be used in hot-plugging.
Power connectors need to be customized to achieve this.

# FAQ

## Q: Do ALTW connectors comply with MIL STD?

A: No, ALTW connectors are only evaluated under EIA, IEC and UL standards.

## Q: What connectors can be used in high-speed base band data transmission?

A: Ceres, X-Lok, M12 D & X-coded, RJ45, DVI, HDMI, USB and FLOS connectors.

## Q: Can ALTW connectors be customized to meet certain requirements?

A: Yes, connectors can be customized to meet customer requirements. If a certification is required, it will be applied. If not, ALTW can provide in-house test reports as a confirmation that the pre-defined specifications have been met.

## Q: Do ALTW connectors have ATEX certification?

A: No, ALTW connectors are not yet certified by ATEX.

## Q: What is the difference between Oleophobic and Hydrophobic protective vents? What is the main function of the vent?

A: These properties refer to the fluid resistance of the membrane in the vent. Hydrophobic means that the membrane is water repelling, while Oleophobic means the membrane is oil repelling.
They are used in applications that require the balancing of internal and external pressures such as electrical cabinets, wireless access points, control hubs and junction boxes. The trapped air inside the enclosures expands or contracts relative to the heat emitted by the components it encloses and the external ambient temperatures.

If your question is not answered here, please contact
Amphenol LTW Customer Service or browse our website for more information.
www.amphenolltw.com

**Scan here to contact us or e-mail us at sales@ltw-tech.com**

# Lexicon

## UV Resistant

Being resistant to ultraviolet light (UV), or sunlight, means being able to withstand or resist the degradation caused by ultraviolet light. UV light causes non-resistant materials and surfaces to fade or discolor.

## Flammability

The ability of a chemical to burn or ignite, causing fire or combustion. The degree of difficulty required to cause the combustion of a chemical is quantified through fire testing.
Flammability can be classified as low (least flame-retarded) to high (most flame-retarded). From lowest to highest it is classified as follows:

- HB - horizontal slow burning: Burning rate under 76mm/min for a thickness below 3mm or the burning stops before 100mm
- V-2: Burning stops within 30 seconds on a vertical specimen and drips of flaming particles are allowed
- V-1: Burning stops within 30 seconds on a vertical specimen and drips of particles are allowed as long as they are not inflamed
- V-0: Burning stops within 10 seconds on a vertical specimen and drips of particles are allowed as long as they are not inflamed

## IEC

The International Electrotechnical Commission (IEC) is the world's leading organization for the preparation and publication of international standards for all electrical, electronic and related technologies. These are known collectively as “electrotechnology”.

The IEC provides a platform for companies, industries and governments to meet, discuss and develop the international standards they require. All IEC standards are consensus-based and represent the needs of the key stakeholders of every nation participating. Every member country has a vote on what is included into an IEC international standard.

## UL 50e

This standard applies to enclosures for electrical equipment intended to be installed and used in non-hazardous locations. It covers additional environmental construction and performance requirements for enclosures.

## UL 1863

This standard applies to Safety Communication - circuit Accessories. It covers telecommunications-circuit accessories, such as jack and plug assemblies, quick-connect terminal assemblies, telephone wall plates, telephone extension cords, cross-connect terminal-block assemblies, maintenance terminal modules, terminal enclosures, cable-splice enclosures, network-interface devices, wire-guide assemblies, and connector boxes.

# Lexicon

## UL 1977

These requirements cover single and multipole connectors intended for factory assembly to copper or copper alloy conductors or printed wiring boards for use in data, signal, control and power applications within and between electrical equipment.

## UL 2237

This standard covers multi-point interconnection power cable assemblies. They may consist of power cable assemblies, male or female power cable fittings, panel-mounted power cable/conductor fittings and feeder-tap power cable fittings, referred to as the device in this standard, used with industrial machinery in accordance with the National Fire Protection Association Electrical Standard for Industrial Machinery, NFPA 79 that have system voltages up to and including 1,000 V.

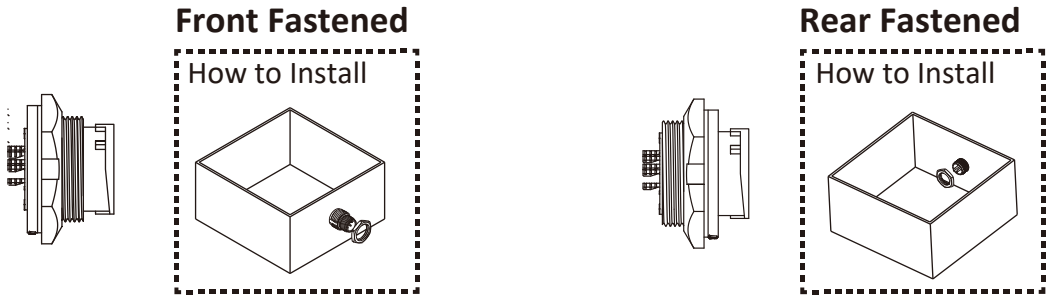
## UL 2238

These requirements cover devices intended for inter-connection of equipment, sensors, and actuators in remote-control, signaling, and power-limited circuits. Included are cable assemblies and fittings, feeder-tap cable systems, feed-through connectors, multi-outlet fittings, panel-mount fittings, and splitters. These devices are rated at no more than 60 A and no more than 600 V. These devices are not intended for disconnect means.

## LV214

This automotive standard was developed by German car manufacturers Audi, BMW, Daimler, Porsche and Volkswagen. It addresses the ability of terminals to be effectively evaluated by crimp force monitors. The terminals must exhibit certain crimp force to be used in an automotive wire harness.

## Fasten Style of Nut



# Lexicon

## Mating Style

### Screw Thread

- Ceres
- RJ45
- Cable Joiner & FICX
- Power
- USB
- M Series
- HDMI
- Cable Gland
- NMEA
- RF
- LED Light Guide
- D-Sub
- DVI
- Vent

### 2 Points Lock Bayonet

- Ceres
- Power
- USB

### 3 Points Lock Bayonet

- Ceres
- Power
- RJ45
- Fiber

### Push Pull

- M Series
- FLOS & FLOS+
- HS-Lok
- USB

### Push Lock With Latches

- RBL
- D-Sub
- SSL

### Push Lock

- X-Lok
- USB

## Termination Style

PCB 180° | PCB 90° | Solder | Screw In | Crimp | IDC | Push In | SMT

## ODVA

ODVA is a global association whose members comprise of world's leading automation companies. ODVA's mission is to advance open, interoperable information and communication technologies in industrial automation. The association recognizes its media independent network protocol, the Common Industrial Protocol or "CIP" – and the network adaptations of CIP – EtherNet/IP, DeviceNet, CompoNet and ControlNet – as its core technology and the primary common interest of its membership.

ODVA's vision is to contribute to the sustainability and prosperity of the global community by transforming the model for information and communication technology in the industrial ecosystem.

## NMEA 2000

NMEA 2000 is a protocol used to create a network of electronic devices – mainly marine instruments – on a boat. Various instruments that meet the NMEA 2000 standard are connected to one central cable, known as a backbone. The backbone powers each instrument and relays data among all the instruments on the network. This allows one display unit to show many different types of information and allows the instruments to work together. NMEA 2000 is meant to be "plug and play" to allow devices made by different manufacturers to talk and listen to each other.

# Lexicon

## Amphenol LTW's IPCS (Intelligent Pre-cabling Systems)

Amphenol LTW Intelligent Pre-Cabling System (IPCS) is your solution for the LED Lighting incorporation in indoor and outdoor applications. With a simplified design and wide flexibility, IPCS solves all your needs for electrical wiring and cabling infrastructure. It also provides large savings in on-site installation time and costs. The concept of IPCS is suitable for ALTW's various connector series, ideal for a large variety of customization.

## Amphenol LTW's Power / Data / Hybrid Solutions

We are dedicated to developing interconnect solution to fulfill customer requirements of power or data applications, and as devices increasingly carry more functions in reduced spaces, Hybrid solutions are the answer to space limitation and multi-function. Below is the product series for Power, Data, and Hybrid applications.

### 0.5A ~ 2A

- Ceres
- X-Lok
- M Series
- D-Sub
- DVI
- HDMI
- USB
- HS-Lok
- FLOS & FLOS+

### 3A ~ 5A

- Ceres
- X-Lok
- M Series
- D-Sub
- SSL
- RBL
- HS-Lok
- FLOS & FLOS+
- NMEA 2000
- USB

### 6A ~ 10A

- Ceres
- X-Lok
- M Series
- Power
- Mini
- RBL
- FLOS & FLOS+
- NMEA 2000
- USB
- Cable Joiner & FICX

### 11A ~ 20A

- Ceres
- X-Lok
- M Series
- Power
- Mini
- RBL
- FLOS & FLOS+
- Cable Joiner & FICX

### 25A ~ 30A

- M Series
- FLOS & FLOS+
- Power

### 50A

- X-Lok
- Power

### 80A

- X-Lok
- Power

### 120A ~ 150A

- Power

## Cross Section Conversion From AWG To mm²

| | | | | | |
|---|---|---|---|---|---|
| 26 AWG | 0.14 mm² | 16 AWG | 1.50 mm² | 4 AWG | 25.00 mm² |
| 24 AWG | 0.25 mm² | 14 AWG | 2.50 mm² | 2 AWG | 35.00 mm² |
| 22 AWG | 0.34 mm² | 12 AWG | 4.00 mm² | 1 AWG | 50.00 mm² |
| 20 AWG | 0.50 mm² | 10 AWG | 6.00 mm² | 2/0 AWG | 70.00 mm² |
| 18 AWG | 0.75 mm² | 8 AWG | 10.00 mm² | | |
| 17 AWG | 1.00 mm² | 6 AWG | 16.00 mm² | | |

# Ingress Protection (IP) Rating Guide

## Waterproof Definition

### Unmated Waterproof

Standalone waterproof or waterproof is assured even without its counterpart. The water will not go through the inner portion of the exposed connector as it is entirely sealed.

### Mated Waterproof

Waterproof is only assured when mated and locked tightly to its counterpart.

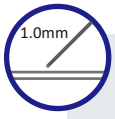
### 1st numeral - solid foreign objects

No protection. **0**

Protected against solid foreign objects of 50 mm Ø and greater. **1**

Protected against solid foreign objects of 12,5 mm Ø and greater. **2**


Protected against solid foreign objects of 2,5 mm Ø and greater. **3**




Protected against solid foreign objects of 1,0 mm Ø and greater. **4**

Dust-protected. **5**

Dust-tight. **6**

Example:

IP 6 5

Protected against water jets.

Dust-tight.

### 2nd numeral - water

No protection. **0**

Protected against vertically falling water drops. **1**

Protected against vertically falling water drops when enclosure tilted up to 15°. **2**

Protected against spraying water. **3**

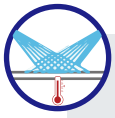
Protected against splashing water. **4**

Protected against water jets. **5**

Protected against powerful water jets. **6**

Protected against the effects of temporary immersion in water. **7**

Protected against the effects of continuous immersion in water. **8**



Protected against high pressure and temperature water jets. **9K**

## Amphenol LTW Technology Co., Ltd.

5F-3, No.51 , Sec.4 , Zhongyang Rd., Tucheng Dist ., New Taipei City 236 Taiwan
Telephone : +886-2-7741-6888 Fax : +886-2-7741-6999
Email : sales@ltw-tech.com Web: amphenolltw.com

## Kunshan Factory

No.62, DaTong Road , Development Zone , Kunshan City , JiangSu Province 215333 China
Telephone : +86-512-5761-0501 Fax : +86-512-5761-0515

## For further information , please contact :

Luc Kan | Sales and Marketing
Email : luc@ltw-tech.com